



# industrial security

*Archae*

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OCTOBER, 1958

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for  
industrial security





THE DOW CHEMICAL COMPANY

MIDLAND MICHIGAN

August 13, 1958



TO MEMBERS OF THE AMERICAN SOCIETY  
FOR INDUSTRIAL SECURITY

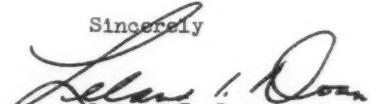
As a large and diversified chemical manufacturer we produce a great many materials basic to the national welfare and defense. Thus World War II brought home to us very acutely the need for a strong system of industrial security.

This country today finds itself engaged in a technological race, the outcome of which may well be the key to survival and, in any event, will have a profound influence upon our future. The safeguarding of our scientific and engineering knowledge and the protection of our physical tools of research and production therefore are a matter of critical concern.

Much of the responsibility for this task lies with the industrial security officer, and to accomplish it effectively requires eternal vigilance and the bringing to bear of the best in methods, knowledge and ingenuity at his command.

You are to be congratulated on recognizing the need for group action, and your Society likewise for its efforts to improve effectiveness in this area of national, as well as individual, concern.

Sincerely

  
Leland I. Doan  
President

# industrial security

Vol. 2, No. 4

OCTOBER 1958

## IN THIS ISSUE

|  | Page  |
|--|-------|
| ADDRESS BY LIEUTENANT GENERAL ARTHUR G. TRUDEAU.....                     | 4     |
| THE SCIENTIST, THE ENGINEER AND SECURITY—<br>Clarence L. Johnson .....   | 5     |
| ADDRESS BY THE HONORABLE KEEN JOHNSON.....                               | 6     |
| SECURITY IS EVERYBODY'S BUSINESS—Dr. Frank Rockwell Barnett              | 8     |
| SABOTAGE THREAT IN THE ELECTRIC UTILITY INDUSTRY—<br>George Bisset ..... | 10    |
| FINAL REPORT TO THE MEMBERSHIP—A. T. Deere .....                         | 12    |
| OUR NEW SOCIETY PRESIDENT SPEAKS—Richard J. Healy.....                   | 14    |
| ASIS OFFICERS—1958-1959 .....  | 16    |
| THE GROWTH OF ASIS—Paul Hansen .....                                     | 18    |
| SECURITY AND UNITED TECHNOLOGICAL PROGRESS—<br>Raymond J. Seeger .....   | 20    |
| INFORMAL ACTIVITIES AT THE 1958 CONVENTION/SEMINAR.....                  | 22-23 |

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## INDEX TO ADVERTISERS

|   |    |
|---|----|
| American District Telegraph Company.....        | 44 |
| American Sentry, Inc. ....                      | 21 |
| Best Universal Lock Co., Inc. ....              | 9  |
| Carey-O'Madigan Associates .....                | 41 |
| Faurot, Inc. ....                               | 37 |
| The Fechheimer Brothers Company .....           | 29 |
| Glassoloid Corporation .....                    | 17 |
| Interstate Industrial Protection Co., Inc. .... | 25 |
| Walter Kidde & Company, Inc.....                | 7  |
| P. O. Moore, Inc. ....                          | 39 |
| Mosler Safe Company .....                       | 13 |
| Penn-Tronics, Inc. ....                         | 19 |
| Perey Turnstile Co. ....                        | 35 |
| Radio Corporation of America .....              | 11 |
| Retail Credit Company .....                     | 15 |

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## *Address by Lieutenant General Arthur G. Trudeau, U.S.A.*

*Chief of Research and Development, Department of the Army, before the Fourth Annual Convention/Seminar of The American Society for Industrial Security, held at The Shoreham Hotel, Washington, D. C., September 16, 17, 1958*



I quote from the Constitution of the United States of America—Article III, Section 3. This Section of our Constitution defines treason, as follows:

Quote. Treason against the United States shall consist only in levying war against them, or in adhering to their Enemies, giving them Aid and Comfort. End of quotation.

It is unthinkable that any good American in his right mind would deliberately commit treason. Yet some otherwise good Americans actually do give "Aid and Comfort" to the enemy—through their deficiencies in industrial security. These deficiencies do not occur by accident. They are caused by either inexcusable ignorance or willful carelessness. Even more distressing, some Americans give aid and comfort to the enemy knowingly, deliberately, and with malice in their hearts.

In withholding aid and comfort from the enemy, I stand shoulder-to-shoulder with you, the members of the American Society for Industrial Security. Together, we strive for ever greater industrial security, and thereby greater security for our beloved Nation.

After more than three decades of Army service, I think I know the danger that faces us from Communism. And I hope I know the importance of security in our military hardware in every phase from inception of a weapon or an item of equipment; through research and development; production and procurement; storage, maintenance and distribution; to ultimate use on the battle field.

As you know, I have served as Assistant Chief of Staff, Intelligence, or G-2, with principal responsibility for Army intelligence and counter-intelligence.

In my present assignment as Chief of Research and

Development, I work in the beginning and very critical phase of the Army hardware cycle. As a combat commander in Korea, I saw the terminal or combat phase of the Army hardware cycle—in which we counted on our weapons and equipment to destroy a fanatical enemy. I had similar experience in combat operations in World War II, in the Southwest and Western Pacific. R&D and combat are certainly the Alpha and Omega, the beginning and the beginning of the end of our mission to preserve the security of our weapons and equipment.

I know that all of us are well agreed that maintaining security is no childish game of cops-and-robbers. Nor is it only an intellectual exercise of matching wits with the enemy.

Security is actually one of the most important elements of our struggle for survival as a free nation in a free world, and we are woefully weak as a nation in preserving it.

Our freedom is challenged today by an enemy who is powerful, fanatic, shrewd, ruthless and unscrupulous. The Communists regard the struggle between themselves and us a matter of life or death—as it truly is.

As Lenin said:

"We are living not merely in a state but in a system of states, and the existence of the Soviet Republic side by side with imperialist states for a long time is unthinkable. One or the other must triumph in the end."

Listen to Lenin again:

"A funeral dirge will be sung over the Soviet Republic or over world capitalism."

*(Continued on page 24)*

## *The Scientist, The Engineer and Security*

*Address by Clarence L. Johnson, Vice President—Advanced Development Projects, Lockheed Aircraft Corporation before the Fourth Annual Convention/Seminar of The American Society for Industrial Security, held at The Shoreham Hotel, Washington, D. C., September 16, 17, 1958*



Over the last 30 years, I have had constant contact with scientists and engineers. It has been my good fortune to work on many highly classified projects. I've always been very much interested in the security problem, which, to me, assumes a greater and greater importance as our weapon technology grows.

The scientist and the engineer react similarly in regard to their feelings on security. My remarks will, therefore, reflect my personal impressions on the problem as it affects both groups.

What is "security" as implied by the terminology of this meeting? Webster says it is "the quality of being secure, safe." It is "freedom from exposure to danger." I would interpret it to mean procedures and methods for keeping vital information from an enemy or potential enemy.

Practically all of my scientific and engineering friends agree that some degree of security is necessary or desirable. The big problem is:

- a. How much security?
- b. How is it administered?
- c. How is it kept from interfering with the required and desirable exchange of data between individuals who have a need to know?

To get down to some specific problems, I would like to touch on why security measures are particularly irksome to scientists and engineers compared to other citizens.

Most technical people attend security briefings and training classes in our large engineering departments. In these classes, they are carefully told interminable detail on how to check secret documents in and out, what to do when they leave their badge or pass at home, but very little about real examples of why all this is required. They are not told how close they

are to an operating Communist cell, that Jones—just down the corridor—was once (or is suspected of being) a card-bearing member of the Party, or that his particular project is of more than passing interest to a possible enemy. There are obvious reasons, most of the time, for not telling them facts such as these, even when they are known. However, the net result is that the effect of this security training quickly wears off. The engineer soon comes to see only the restrictions to his activity resulting from cumbersome systems.

In those cases where the "need-to-know" is a factor any smart technical man can readily prove (to himself, at least) that he has a need to know all about everything going on in the scientific world. He may be drawing up bolt heads, but he must know the shape of the latest bomb warhead, because some day he might have to provide clearance for it! Applying the need-to-know formula calls for the highest degree of judgment and it is, perhaps, the hardest element to administer in the security field. It irks the technical man to have such decisions made for him by non-technical superiors.

One of the hardest things for him (and me) to understand can be illustrated by some examples.

A famous, competent Air Force general plans and makes a speech before a technical institute concerning test results on a captured MIG-15 aircraft. Immediately, a high security classification is placed on the meeting. All those attending must submit security clearances approved by an official of the company employing the engineer. When the man attends the meeting, his hand is stamped with a designation visible only to ultraviolet light, so when or if he leaves the room he can be positively identified upon re-

*(Continued on page 27)*

## *Address by The Honorable Keen Johnson*

*Former Governor of The State of Kentucky, presently Vice President, Reynolds Metals Company, before the Fourth Annual Convention/Seminar of The American Society for Industrial Security, held at The Shoreham Hotel, Washington, D. C., September 16, 17, 1958*



... I congratulate this youthful organization upon the stature it has attained since its formation in 1955. The remarkable growth indicates that there was a distinct need for the American Society for Industrial Security, a need that has been recognized by the large membership that has welcomed the opportunity to affiliate with the Society. The day has passed when each individual can look out for himself ... But in the American Society for Industrial Security, bound together by the amalgam of good will and a common purpose, you can better solve such problems as are common to all of you. Your Society is striving to attain worthy objectives. It is essential that you have a goal—understand the object ...

You have advanced amazingly in your effort to place your important activities on a professional basis; to elevate the status of industrial security; to increase efficiency of the programs for which you are responsible. The day has passed when experience as a policeman or law enforcement officer is the major requisite in qualifying as director of an industrial security division. A director should be a man with a college education; he should be a pretty good psychiatrist; a good administrator, a keen judge of human nature who has the faculty of getting along with people, understands the importance of public relations, the necessity of avoiding that which will impair the community relations of his company in cities where plants are located. He should be a pretty good lawyer. It is essential that he be competent in detecting crime and be gifted in training men under his supervision in the fundamentals of security.

In many phases of security work the major concern is prevention—see that such precautions are exercised as will avert destruction of property, prevent fire, prevent the divulging of industrial secrets. According

to the Building Research Institute, fire loss is not the main threat to the nation's property owners. Loss from corrosion of metals runs more than six times greater, it says. Annual property losses due to fires amount to roughly \$885,000,000, the Institute says, compared with an annual loss of 5-1/2 billion dollars due to corrosion of metal, as estimated by the Massachusetts Institute of Technology's Laboratory. It is difficult to place a dollar value on prevention as the importance of your activities is evaluated by your company executives. But it is a service that is indispensable, and its worth in dollars is incalculable. You are important people.

There are phases of security activity which make a specific dollar return to your employer. I hope that Paul Hansen, Director of the Industrial Security Division of Reynolds Metals Company, will not be embarrassed as I cite an example. A useful phase of activity of the Reynolds security division is that of investigating alleged misconduct of employees. There have been instances in which dishonest employees have been detected in embezzlement and other fraudulent acts. During one calendar year Paul recovered more in restitution due to dishonest acts of untrustworthy employees than was required to operate his division.

The security division of an industrial corporation can render valuable service in investigating applicants for employment. There have been many who sought jobs with our company who have appeared qualified and acceptable. Investigation by the Security Division has divulged information that prevented the error that would have been made had the applicant been employed. Our company estimates that it costs

*(Continued on page 34)*

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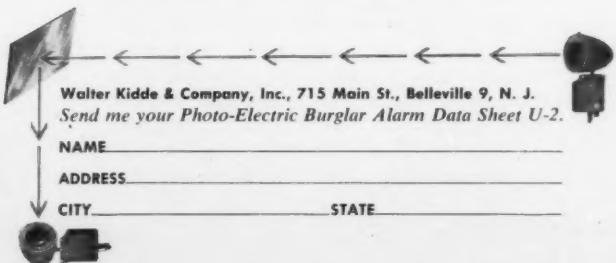


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## ***Security is Everybody's Business***

*Address by Dr. Frank Rockwell Barnett, Director of Research, The Richardson Foundation, Inc., New York, N. Y., before the Fourth Annual Convention/Seminar of The American Society for Industrial Security, held at The Shoreham Hotel, Washington, D. C., September 16, 17, 1958*



The men who sit in this audience are officers in the front line of national defense; and although we meet in the seeming sanctuary of a comfortable hotel dining room, this is actually a battlefield conference. For, owing to revolutionary technology, the factor of "security," frequently understressed, is now one of the most vital components in the world power struggle.

For centuries, other less fortunate peoples have had to confront the specter of subversion, defection and mass sabotage, stimulated by the agents of neighboring powers. European military strategists, unlike their American counterparts, stress the importance of the "home front." Germany, for example, surrendered at the end of World War I, although her soil had not been devastated by the Allies and while many of her divisions were still intact. According to the Prussian General Staff, the Fatherland was "stabbed in the back" by German civilians who allowed the home front to collapse. In 1940, it was the erosion of the French home front which washed out the Maginot Line. Other nations produced their Quislings and collaborators who gave impetus to the thrust of Nazi fifth columns.

In America, industrial sabotage and fifth columns, while always a potential nuisance, did not materialize into mortal peril in the first two World Wars; and those saboteurs and traitors who did appear were effectively disposed of by the FBI and the intelligence departments of our military services. We are not likely to be so fortunate in the future; for the dimensions of the threat have been multiplied a hundredfold by the strategies of nuclear blackmail and "coexistence" coupled with the new techniques of mass communication, perverted group dynamics and the manipulation of public opinion. Industrial security is thus

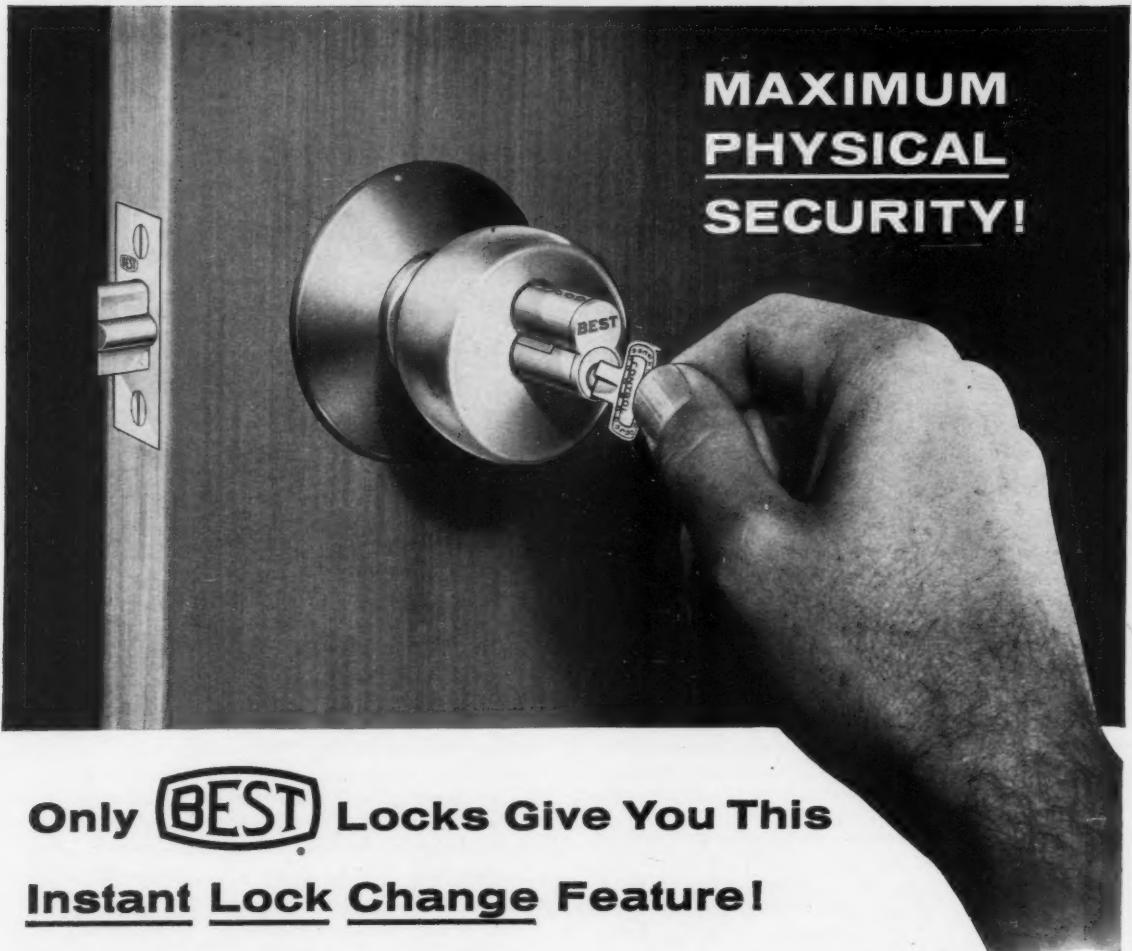
only one part of the more general problem of loyalty in a society whose basic values are under relentless political and psychological assault.

The American free enterprise society faces two mighty competitors—World Communism and International Socialism. Some students would argue that Communism and Socialism are twin engines in the same juggernaut. But perhaps there are useful distinctions. The threat of Communism is largely external, military, scientific, political, and economic. It is an *immediate* threat. Its weapons are violence, subversion, propaganda and blackmail. The danger of Socialism is largely internal and long-range. Its weapons are education, persuasion and the ballot-box.

Many Socialists are as firmly opposed to the force and terror of Communism as are businessmen. Socialists—unlike hard core, fanatical Communists—are open to counter persuasion from businessmen sufficiently articulate to debate issues with them. Socialists have been voted out of power in England and Australia—but when Communists have been threatened by the will of the people, they have, as in Hungary, sent in armored divisions to crush the opposition to lifeless puppets. Social Democrats hate those methods.

Although I do not in any way agree with Socialist economic theory, it is only fair to admit that many Socialists—as human beings—are honorable, decent and even idealistic people who want to achieve good things for humanity. They are not professional revolutionaries or conspirators like the Communists. Indeed, some Socialists are so idealistic they cannot comprehend how ruthless and cynical Communists can be. When Communists come to power, Socialist intellectuals are often the first to be purged. In Czechoslovakia

*(Continued on page 29)*



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## *Sabotage Threat in the Electric Utility Industry*

*Excerpts from the address given by Mr. George Bisset, Senior Vice President, The Potomac Electric Power Company, Washington, D. C., before the Fourth Annual Convention/Seminar of The American Society for Industrial Security, held at The Shoreham Hotel, Washington, D. C., September 16, 17, 1958*



I am keenly aware of the many years of experience in the security field represented by the membership of the American Society for Industrial Security. Although your Society is not yet four years old (organized 1/21/55) it is already the recognized leader in the area of professional industrial security. Certainly it would be difficult to find a group more experienced in this field than is represented by the audience seated in this room today.

With a full appreciation of these facts, it would be presumptuous of me to suggest that I have *all* the answers with respect to the protection of our facilities against sabotage. However, I believe that over the years I have gained some knowledge of the problems involved, and I hope that this discussion will serve to create a new interest in this area, and possibly lead to further consideration of this subject by the members of your Society.

And now, let us take a quick look at the electric power industry as it exists in the United States today.

It has been 76 years since the electric industry was born in New York City, when Tom Edison started the first central lighting system serving a total of 59 customers. From this very modest beginning the industry has grown tremendously, and today 98% of all occupied homes in this country, both urban and rural, have been connected for electric service. In the last seven years alone, the sales of electric power have doubled with a total of 561 billion kilowatt hours being sold during the past year. The industrial customers, representing the backbone of our tremendous manufacturing capability, use about 50% of this energy.

In our present day economy we have become quite accustomed to speaking in terms of millions and billions and I fear our familiarity with these terms has

resulted in a certain loss of respect for what they mean. So let us view the subject from a slightly different approach. In 1956, the average annual use of electricity by the U. S. worker totaled about 24,600 kilowatt hours. It has been estimated that this amount of energy is equivalent to the work which can be performed by approximately 370 men working eight hours per day for 240 days per year. This means that in the United States, the electric power industry provides an additional energy equivalent of 370 persons for each worker in the manufacturing industry.

Dollar wise, the industry is certainly big business. In December 1957, the total investment in investor-owned companies amounted to approximately 36.8 billion dollars, and it is expected that another 4 billion dollars will be invested in plant during 1958. These companies represent about 75% of the total electric industry in the United States, and paid approximately 1.9 billion dollars in taxes during the past year. I mention these figures only to establish in your mind the size of the electric industry and its present position in our domestic economy.

Now just a word about where we stand, power-wise, from an international standpoint. The most recent figures available on this subject, as published by the Edison Electric Institute, indicate that we lead the world in this respect. The United States has more installed electrical capacity than any other country in the world. In fact, we presently generate and use over 40% of all of the electric power produced in the world today. During these days of much talk with regard to what Russia is doing in the scientific, educational and industrial fields, it is reassuring to know that we have access to usable sources of energy in the form of electrical power which exceeds that of the USSR by a ratio of more than 3-1/2 to 1.

*(Continued on page 35)*

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# Final Report of President A. T. Deere to the Membership

On one of our great public buildings in Washington is inscribed a Shakespearean quotation, "What is Past is Prologue . . ." Indeed, nothing more aptly describes the report of an outgoing President.

In touching upon the highlights of my administration, I want to emphasize that to my fellow officers and directors, the committeemen, and staff members belongs the full credit for these things.

A professional organization, such as ours, is evaluated by its membership; its strength is determined largely by the number of its chapters; and its worth is measured by the service it renders. When your present administration took office October, 1957, our efforts were directed toward an increase in membership, the chartering of new chapters, and a program of service. It gives me much genuine pleasure to report that the total membership as of this September 15 was 1137, an increase of 50% since October 1957; we chartered 14 new chapters, an increase of 100%. The new chapters include those for Huntsville (Alabama); Phoenix; Edwards Air Force Base; Boston; Buffalo; Rochester; Schenectady; Salt Lake-Ogden; San Diego; Santa Barbara; Denver; Augusta; Central Minnesota (Minneapolis-St. Paul); Cleveland and Richmond, Virginia.

In February, your Executive Committee appointed the first Executive Director for the Society. This appointment was made with the full knowledge that he could serve for a period of only six months. His services to the Society were invaluable, and the need for an Executive Director has been firmly established. It is anticipated that a new Executive Director will be announced in the immediate future.

Your Society is one of the sponsors of the National Military-Industrial Conference and was represented at its February 1958 meeting in Chicago. In the 1959 conference we will not only again be a sponsor but we will also actively participate in its program.

Your Society in 1958 established working liaison with government departments requiring security compliance by industry. The benefit of this accomplishment will manifest itself to the membership in the years ahead.

Chapter participation in the revenues of the Society has become an accomplished fact; and, beginning July 1, the National Office initiated the program for reimbursement to chapters, based on membership.

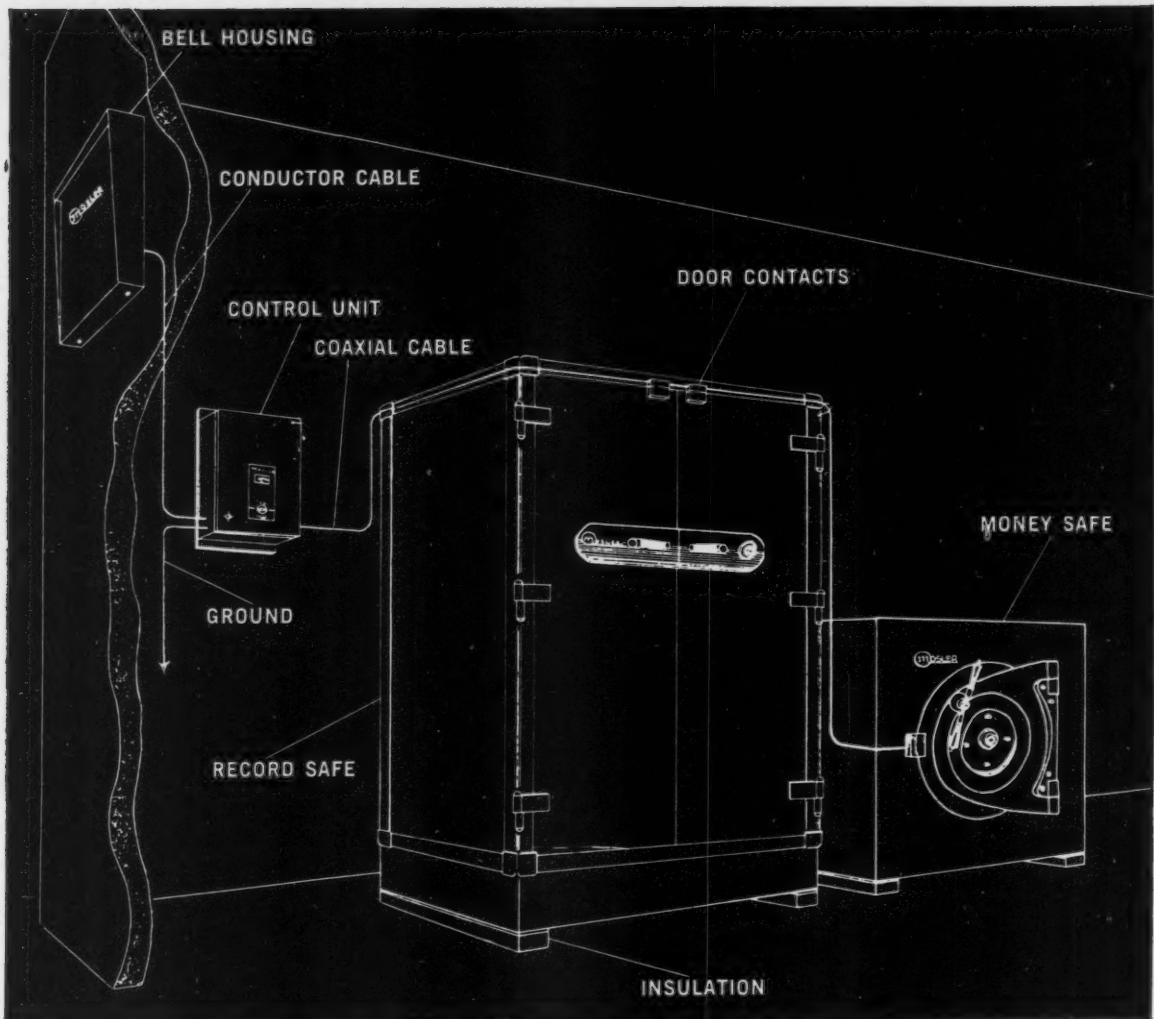
During the ten and one-half months since October last year, your national officers and members of the Board of Directors, in furtherance of the affairs of the Society, traveled in excess of 95,000 miles. While our official organ, "Industrial Security," has not reached full maturity, it has grown considerably during the past year, and articles of national interest now appear in its pages.

There are many other accomplishments which could be mentioned, such as the printing of a new membership directory and brochure, the obtaining of a tax-exempt status for the Society; developing new rules and regulations for the governance and guidance of chapters; and establishment of a reference library of security manuals in the National Office, all of which shows the growth and soundness of your Society.

I cannot, of course, single out any one officer or committee as being directly or primarily responsible for the advances that were made during 1958. Our success is the result of the combined efforts of all the officers, of our standing and special committees, and of our Society members. The reports of your committees already have generated much interest in industry and government, and these will be made available to the general membership in the near future.

To those men and women of the Society who made these things possible, I acknowledge my humble thanks and sincere appreciation. To them belong the honor and sense of pleasure justly derived from having performed well. But these accomplishments also have

(Continued on page 33)



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# *Our New Society President Speaks*

It is with a great feeling of pride that I extend my sincere thanks and appreciation to you for this very impressive honor you have extended to me. I am truly grateful.

In accepting the presidency of ASIS I can assure you I clearly realize the responsibility associated with the position. I also know there are no short cuts to success in an undertaking such as this and that hard work and tireless effort are essential.

The objectives of the Society for the coming year have already been clearly charted by the presidents who have preceded me --- Paul Hansen, Russ White and Al Deere. If we are successful in following the course already set out by these outstanding leaders and obtain the same measure of success they enjoyed during their terms of office, we can be sure of a most successful year.

In these troubled times, I am sure we will individually and collectively face many problems during the forthcoming year in carrying on the work already started. However, it gives me a feeling of great confidence to have such an outstanding and competent group of officers and members of the board as my associates. Teamwork will be the key to our efforts during the coming year as it has in the past, and the assistance, guidance and advice of the Board and other officers will be highly valued and of great help.

In spite of the assistance we can expect from the other members of the team, I am sure there will be times when difficult decisions will be required with no one having clear cut answers. In such instances, I am sure you will not mind if I pause for a moment to seek spiritual help in an effort to find the right way.

Your individual help is also needed, and you each can be of great assistance in this team effort. You can offer your active participation in the affairs of the Society, and I hope you will voluntarily do so. In addition, each of you can assist by soliciting others in your geographic area to join the Society and become active participants in ASIS affairs. It is only through the joint participation of everyone that we can be assured of continued success for our organization, which has already built up an enviable reputation in three short years.

Thank you again for your confidence in selecting me for this position. In all my efforts and thoughts, I shall endeavor to warrant this vote of confidence you have given to me.

Richard J. Healy, assistant director of industrial relations for security at The Ramo-Wooldridge Corporation, Los Angeles, Calif., has been in charge of the company's security program since 1955.

Born and raised in Iowa, Mr. Healy received his B. A. from the University of Iowa and attended law school at the University of Maryland.

He served in the European theatre of operations during World War II as an intelligence and tank officer in General Patton's Third Army. After 5 1/2 years in the Army, he was released as a Major in 1946 and joined the FBI as a special agent.

He served in Washington, Dallas, Cincinnati and Dayton in the FBI, and resigned in 1951 to accept an appointment as assistant to the Inspector General, Air Research and Development Command, U. S. Air Force. He resigned this appointment to join Ramo-Wooldridge.

Mr. Healy has gained a nationwide reputation in the security field, not only because of the security program he developed at Ramo-Wooldridge, but because of some of his outside activities relating to security work.

He is a charter member of the American Society for Industrial Security, and in addition to holding various chapter offices, he served as western regional vice president for 1957-58. He is also active in the Society of Former Agents of the FBI. In addition, he has published several articles on the subject of industrial security which have received nationwide distribution. He is also a guest lecturer at the Department of Defense Security School at Ft. Holabird, Md., and is a member of the advisory committee for the Police Science Program at Long Beach State College.

Mr. Healy lives in the West Westchester area of south-west Los Angeles with his wife, Lee, and two daughters.



**RICHARD J. HEALY**



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FACTS ABOUT PEOPLE





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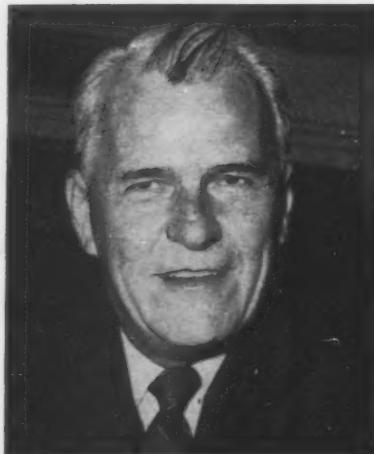


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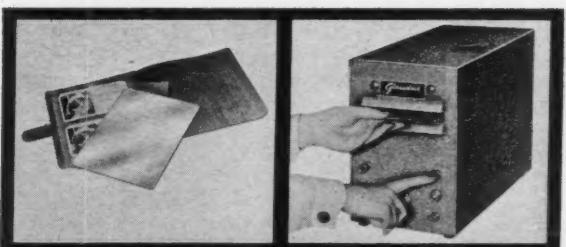
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# *The Growth* of ASIS

PAUL HANSEN  
Director, Security Division,  
Reynolds Metals Company

"The key to the Society's future lies in the field of membership growth," said Paul Hansen, Chairman of the 1957-58 Membership Committee. And he set about the business of assuring the future for ASIS with a will that has made its impact felt in all of the security professions during these years immediately past.

Organizing his national membership committee, which consisted of Major Taylor Howard, Vernon E. Osborne and Thomas M. Healy, and having already stated his committee's objective, it remained only for the committee to evolve its program for achieving its stated purpose.

Since it is manifest that no professional society can assert that it speaks for the profession when the majority of the practicing personnel in that field are not members of the Society, the committee discovered it possessed a ready-made spear for its concerted action during the 1957-58 year.

ASIS had grown from a handful in 1955 to a total of 413 by the 1956 convention. And, during the last year that William Y. Humphreys of United Aircraft served as Chairman, the membership doubled again. By the 1957 convention/seminar, therefore, the total membership stood at 794 members, which resulted in a 111% increase. This percentage increase in growth had been spectacular during the first years. And, from the Humphrey-built base of 800, Hansen and his committee had aspired to a membership of 2000 by the recently held 1958 convention/seminar. After all, they reasoned, this would only be a percentage increase of 150%, a goal of reasonable proportions in view of the past record of growth.

To bring this about, they settled on a three-point program which the Executive Committee of the Board endorsed.

First, they established the President's Chapter of the Year Award. This award will go to the chapter that has the greatest percentage of increased membership over each of the next five years, commencing with the year 1957-1958. As the award is made each year to the winning chapter, there will be permanently displayed in ASIS headquarters in Washington, D. C., the following: (a) the winning chapter's name, (b) the year of the award, and (c) the chapter chairman's name. For this first venture in recognition of chapter percentage of membership growth, the competitive period was designated as May 1 to September 15, 1958, and only those chapters which were organized and operating as of May 1, 1958, were allowed to participate in this year's contest.

The San Diego, California, chapter, under the able leadership of George D. Higgins, Jr., of Convair, Division of General Dynamics Corporation, was the hardest working chapter in this field for 1958 and was consequently the first winner. Their percentage of increase was over 199%.

During the luncheon services of Wednesday, September 17, Albert T. Deere, former president, made this announcement personally. In addition to the plaque, the following letter was presented to the winning chapter:

"To the Officers and Members of San Diego Chapter, American Society for Industrial Security. It is with a great amount of personal satisfaction that I am privileged to award the first annual President's Citation for Membership Growth to your chapter.

"The American Society for Industrial Security will grow commensurate only with the collated joint efforts of its chapters and through the personal zeal and enthusiasms of its membership. By your work in the past year of attaining the greatest percentage of mem-

bership growth of any chapter in the Society, you have demonstrated to all that, in your chapter, these essentials for success have been splendidly blended into real effectiveness and noteworthy achievement.

"Permit me, therefore, to commend both your spirit and your morale to the attention of the Society as a whole. It is my fervent hope that other chapters will strive to emulate you in his vital area of membership growth. ASIS is grateful to San Diego Chapter for its contribution toward the firm founding of the industrial security profession in the United States.

"Please accept, Mr. George D. Higgins, Jr., as Chairman of the Chapter for 1957-58, for yourself and for your fellow members, my sincere thanks and the heartfelt appreciation of the Board of Directors of ASIS, for a job well done. Signed, Albert T. Deere, President."

The second facet of the picture which Hansen and his committee sought to cover was in the area of individual effort. To this end, a Certificate of Merit was established to be awarded each year to the single ASIS member who has received and sponsored the largest number of members in excess of five, again for 1958, from May 1 through September 15, 1958. This award was declared open to all members, except national officers and directors, regional vice-presidents and members of the national membership committee.

The winner of this award will also each year receive a complimentary registration fee, including the cost of the luncheon and dinner meeting for the convention. But—he, personally, must attend the convention and remain to take advantage of his phase of the award. The Society will also recognize the two members, by honorable mention, ranking second and third in this area of personal achievement.

During the luncheon of the 17th also, President Deere announced the winner of this award for 1957-1958, to be Lawrence M. Taylor of The Ralph M. Parsons Company, of the Southern California Chapter. The appropriate certificate was given to the Los Angeles chapter chairman, in the absence of Mr. Taylor. Honorable mention was accorded to George D. Higgins, Jr., of the San Diego Chapter and to Victor J. Scodius of the University of Michigan, Willow Run Laboratories of the Detroit chapter.

As the third area of membership growth to be recognized, the Membership Committee settled upon a special recognition for the Regional Vice President who established the greatest number of new chapters in his region for the tenure of his office. This certificate of merit was established in recognition of the fact that the growth of ASIS membership and local

(Continued on page 41)



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# SECURITY AND UNITED STATES TECHNOLOGICAL PROGRESS

RAYMOND J. SEEGER, DEPUTY ASSISTANT DIRECTOR, NATIONAL SCIENCE FOUNDATION.

"Security is necessary." Everyone agrees with this statement. The only question is, "Just what is security?" We would probably agree, too, that the best security is the securing of the best people. But who are the best people? I recall an incident in World War II. A colleague and I, as "experts" on high explosives, were visiting the Hercules Powder Company. A large sign glared at us near the gate: "All matches to be deposited here." My friend, who is an inveterate smoker, carefully emptied all his pockets of his many match folders. Later, as we were chatting within the security gate, he pulled out a bottle of TNT from his pocket. I exclaimed aghast, "Why did you not leave that at the gate?" He observed, "No one asked me for it. All they wanted was matches."

May I begin my brief remarks by noting that we can look at anything, a match, or a mouse, or a man, from three essentially distinctive viewpoints: aesthetic enjoyment, or philosophical relatedness (i. e., science), or technological use. I am deliberately differentiating here between science and technology. We speak of this age as a space age; it was formerly called an atomic age. It has never been regarded popularly as a scientific age. And rightly so! Comparatively few of us behave scientifically in our everyday lives. About a year ago in Washington I attended a lecture on satellites. In the ensuing discussion period, a Dean of a School of Education remarked, "The only question that has ever disturbed me is what keeps a satellite up there." Emboldened by this admission of ignorance, a school superintendent added, "The only question that worries me is, 'What keeps it going, when it is up there?'" Answers to these questions about the earth's natural satellite, the moon, were given almost three hundred years ago by Isaac Newton. We seem to have not yet learned the first principles of science, much less the method by means of which these principles were established. In our discussion today, we have been speaking of research and development. We run the words together so hurriedly that they appear to symbolize a single concept. Nevertheless, the basic research end of that spectrum is quite different from the development end—applied research being somewhere in the middle.

What is basic research or science? Science is the result of the use of the scientific method. "What," you persist, "is the scientific method?" A method employed by a scientist! It may appear that we are running into a circular definition. I am trying, however, to emphasize that the "what," science, is less important than the "how," the scientific method,

which is still less significant than the "who," the scientist. Our factual knowledge is merely the by-product of the use of the scientific method. It was Henri Poincare who once said, "Science is no more a collection of facts than a house is a collection of stones." It is the scientist, above all, who is the key to the locked problem. The scientist begins by asking questions of nature. Sometimes the answers may be stupid or even meaningless—because the questions themselves have been stupid or meaningless. The answers we call observed facts. The scientist then sorts out these observed facts, and looks for related factors among them. Finally, he seeks to combine all the related factors into a single factitious theory. I use the word factitious in this connection to emphasize that the comprehensive view is largely man-made. On the basis of this new viewpoint, he asks further questions and obtains new observed facts; he then seeks new related factors and a new factitious theory. Thus the process is repeated in an ever-widening spiral. It is based upon two assumptions: (1) the uniformity of nature, i. e., that nature under similar conditions always behaves the same; (2) the comprehensibility of nature, i. e., that nature is understandable by us humans. Out of these two assumptions, there stem two corresponding checks on all scientific theories: (1) agreement with the observed facts; (2) agreement among the observers of these facts.

What I wish to stress particularly at this time is the significance of the individual scientist, the importance of freedom for his imagination. Science is not quite the prosaic process that some would make out. The scientist is akin to the poet, the maker. Our great scientists have all had a highly imaginative sense. For example, let me illustrate with a well-known example once given by Sir William Bragg. Consider a chain in which the links are alternately copper rings and iron rings. Let us start an electric current in the first copper ring. Its magnetic field will magnetize the iron ring. The change of magnetism in the iron ring will produce an electric current in the next copper ring. This current, in turn, will magnetize the neighboring iron ring; the change of its magnetism will produce an electric current in the next copper ring, etc. An electromagnetic disturbance is thus propagated in this manner along the chain. I forgot to mention that iron is really too costly for this experiment so that we will have to dispense with the iron rings. We begin again. The start of an electric current in the first copper ring produces a changing magnetic field about the second copper ring, in which an electric current thereby is induced.

The magnetic field of this current, in turn, produces a changing magnetic field about the next copper ring, and hence an electric current there, etc. Again an electromagnetic disturbance is propagated along the rings. I forgot to note that copper also has gone up in price. We will have to dispense with all the copper rings except the first one, and that one we will have to make very small. Let us start an electric current in this ring. Amazingly enough an electromagnetic disturbance, a radio wave, is propagated out into space. The visualization of such a process in empty space was a great feat of imagination. What seems almost incredible is that such electromagnetic waves were first predicted by scientific theory and then found experimentally. Prediction is a sine qua non of a scientific theory. We are not surprised if a theory describes the observed facts upon which it is built; we expect it to do so. We are always astounded, however, when a theory predicts new facts which are then actually observed. More recently, in 1932, Carl Jansky noted some electromagnetic noise in his investigations in New York City. The source of this radiodisturbance was found not to be in the neighborhood; rather it seemed to come from the sky—radio signals from outer space. In 1946, a Dutch astronomer, H. C. van de Hulst, suggested that a flip-flop of the relative positions of an electron and proton in a hydrogen atom might be expected to produce

such a radio wave 21 cm. in length. In 1951, an American physicist, Edward Purcell, observed incoming radio waves exactly 21 cm. long! Such predictions, based solely upon imaginative thinking, are startlingly encouraging.

The science of which I have been speaking is sometimes called basic research, or pioneering research, or exploratory research, et al. Unfortunately, the term basic research is used in so many different senses that one is almost forced to define it in order to ensure any communication of thought. Some years ago I heard a Government official remark, "By definition, there is no such thing as basic research in engineering." This is an attitude common among physicists dealing with some of the more fundamental problems of nuclear investigations. Of course, there is always the danger that basic research is what one does oneself, and applied research is what others do. In view of this general confusion, I may be pardoned for discussing my own conception of basic research. Let us consider an engineering problem! What materials should be used to insure against electric breakdown? Basic to the solution of this problem is a knowledge of the physical and chemical properties of materials. What determines the physical and chemical properties of materials? This is a problem of the physicist and of the chemist. Basic to an answer to this query is

(Continued on page 27)

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## *Informal Activities at The*



Harold Knapp; H. E. Rudin; Dave Troupe; Fred Omrus and looking over the shoulders of Harold Knapp, Larry Buchman.



Mrs. Dick Healy; President-elect Dick Healy with outgoing President A. T. Deere and Mrs. Deere.



A few of the Washington Host Chapter members; Bob McCutcheon; Ed Dougherty; Cass Dryer; Paul Hendrickson and Col. Egan.



Mr. Howe, Jim Lynch, Lowell Grisham, Wayman Strickland, T. W. Wathen.



Comdr. J. G. Bauer; John W. Dale; Harry C. Van Pelt; Max E. Clark.



Col. and Mrs. Howard John; George A. Macrechern; Jack Lennon.

# *The 1958 Convention/Seminar*



A group of the West Coast Members at the reception.



Col. and Mrs. Slattery, Arthur Tudor and Mrs. Quillen and Capt. Eugene Quillen.



Mr. and Mrs. Cass Dryer; Mrs. Paul Hendrickson and Mrs. Harry Crow.



Members from the Detroit Chapter: Victor J. Scodius; Joe Keeley; Fred Carse; William A. Chilman; F. N. Quinn; Lee Malone; Charles L. Stead.



Convention Chairman Harry Crow shakes hands with Vice Pres. John L. Buckley, with Charlie Haas and Paul Cooper of the Washington Host Chapter joining in the greeting.



Society wives, husbands and guests: Mrs. S. G. Henry; Mrs. Paul Hansen; General Dillon; Maj. Gen. S. G. Henry; Russell E. White; Paul Hansen; Clarence Bracy; Mrs. Clarence Bracy; Gloria B. Carry; Mr. and Mrs. Ed Robbins

### **General Trudeau (Continued)**

Joseph Stalin frequently repeated these warnings.

Listen to Dmitri Z. Manuilsky, Soviet economist and representative at the United Nations. Manuilsky says:

"War to the hilt between Communism and Capitalism is inevitable . . . The bourgeoisie will have to be put to sleep . . . As soon as their guard is down, we will smash them with our clenched fist."

Now listen to how Nikita Khrushchev states the Communist determination. Khrushchev says it in five syllables:

*"We will bury you!"*

From these warnings, I think it's plain that we must regard the struggle between the Communists and the Free World in exactly the same way as the Communists consider it—as literally a matter of life or death, a matter of National survival.

As I have pointed out, security is actually one of the most important elements in this struggle for survival. And at no time is security more important than in the Research and Development phase, for R&D is the fountainhead of all our weapons and equipment. An item compromised in the R&D phase is compromised straight through the production, distribution and use phases; and the enemy has plenty of time to prepare his defenses against it.

We just can't accept any risk that our industrial base is thus jeopardized!

The importance of our industrial base as one of the cornerstones of our national security has been recognized since the days of our founding fathers. Alexander Hamilton put it this way, in the Federalist Papers:

"Not only the wealth but the *independence and security* of a country appear to be materially connected with the prosperity of manufactures . . . Every nation, with a view to those great objects, ought to endeavor to possess within itself all the essentials of national supply. These comprise the means of subsistence, habitation, clothing, and defense. The possession of these is necessary to the perfection of the body politic; to the safety as well as to the welfare of the society."

Still quoting from Alexander Hamilton, he continued:

"The extreme embarrassments of the United States during the late war, from an incapacity of supplying themselves, are still matters of keen recollection; a future war might be expected again to exemplify the mischiefs and dangers of a situation to which that incapacity is still, in too great a degree, applicable . . . To effect this change, as fast as shall be prudent merits all the attention and all the zeal of our public councils; 'tis the next great work to be accomplished."

What he has to say is just as fresh, just as applicable,

today as it was when he first uttered it. As he points out, a future war might be expected again to exemplify the mischiefs and dangers of our present situation.

But the Communists consider themselves perpetually at war—last year, this year, next year, always. They even define peace as a condition that can exist only on their terms of a classless world.

Their intelligence and counter-intelligence, accordingly, is practically on a war-time basis. And their espionage, particularly their industrial espionage, is rated as superior by our own intelligence professionals.

There is documentary evidence of the excellence of Communist industrial espionage. It was most effective against Germany during the 1920's and 30's. It was effective in this country during World War II—and would have been far more effective but for the yeoman work done by the Federal Bureau of Investigation, the military services, and the scientific and industrial organizations themselves.

As a specific example of the effectiveness of foreign espionage—including that inspired by the Communists—we have only to recall how much came to light as the result of the defection of Igor Gouzenko, the Soviet Embassy clerk who had the cold courage to go to the Canadian Government with his story of the true proportions of Communist espionage. Herbert Philbrick, who was a Communist for the FBI in this country, similarly testifies to the effectiveness of Communist espionage.

For another example, during the Spanish Civil War, about 2,000 Americans and Canadians volunteered to fight for the Loyalists. Each of these volunteers was required to surrender his passport to the Communists. We have to assume that these passports have been used time after time by Soviet agents to assume validated and accepted identities as American Citizens. In one well-known case, a Soviet agent assumed the identity of a Canadian citizen, then was naturalized as an American citizen, and in this disguise penetrated a sensitive installation. It is safe to assume that we are still being hurt by these agents.

For still another example, consider the case of the Farben Industries in Germany in the 1930's. Communist agents were extremely active within it, and remarkably successful. It was a long time before investigation revealed the extent of their penetration of the Farben Industries.

In this connection, I wonder seriously just how many of us say that our organizations have never mislaid a classified document? The word "mislaid" is of course a euphemism. Actually, whenever a classified document is mislaid, or unaccounted for, it is completely out of security control. It takes only a minute or two for an agent to photograph a document and return it with no indication that it has been compromised.

In most cases of mislaid classified documents, the only safe assumption is that security has been violated.

Smart agents do not steal documents if they can photograph them. Reporting the loss will not repair the damage that has been done. It will help greatly, however, to prevent a recurrence.

As we all know, espionage is not nearly so much a business of a sinister-looking agent slitting a throat to make off with a briefcase full of TOP SECRET war plans, as it is the patient putting-together of numerous bits of information to complete the grand design. The typical industrial espionage agent today is much more apt to be an industrial expert than a cloak-and-dagger expert.

As a specific example of the importance of safeguarding classified information in smaller matters as well as large, let me cite an experience I had on one of my recent visits to a contractor working on a very sensitive project. I will not identify the company further. I noted example after example of what seemed to me very loose security handling, particularly in ignoring established control procedures. Some of these deficiencies, even though not too serious in themselves, could have quickly added up to an extremely critical threat.

On my return to Washington, I called the matter to the attention of the Assistant Chief of Staff, Intelligence. Fortunately, the problem had already come to his attention and he was taking corrective measures.

What bothered me is that probably some damage had already been done at this particular plant. Our only sure knowledge of how badly we are being hurt in such cases comes from defectors from the Communist cause or when they develop equal or superior items of equipment from the knowledge gained.

What bothered me even more is that if this particular plant is a fair sample, similar laxities and deficiencies probably exist at other plants. Thus, in spite of our best security efforts, and no matter how well we may think we are doing, we still have very serious security problems.

Not all our security problems come from the formal Communist intelligence apparatus. Soviet-inspired espionage in the United States falls into two general categories—"legal" networks and "illegal" networks. A "legal" apparatus is one in which the control agent has entered the United States legally. He may have diplomatic status as a military or commercial attache, or he may be a member of a trade commission or a visiting cultural group.

An "illegal" apparatus is one in which the control agent has entered the United States illegally under such cover as a false name, forged passport or false birth certificate.

In either case, his mission is to establish an espion-

*(Continued on next page)*



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### **General Trudeau (Continued)**

nage ring in a given target area or to take over control of one already established.

In the case of the "legal" net, the control agent is able to work from the cover of a diplomatic establishment. If his insidious activities are discovered, he has the protection of the Soviet Union. The worst that can happen is that the individual may be subjected to a *persona non grata* action, and recalled home.

A recent example of this is the case of the Soviet commercial attache whose espionage activities were exposed by the FBI.

In the case of the "illegal" apparatus, the control agent does not have the protection of his government. In fact, his government will deny any relationship with him. When exposed, he is subject to prosecution under the espionage laws of the United States. A recent example of this is the Soviet master spy Colonel Abel, who is serving a prison term for his long-time espionage activities.

Since these agents must have sources and information, they must establish rewarding contacts within their particular target area. It is here we find the traitors who for many reasons sell their services, and perhaps their souls, to the cause of Communist espionage.

Such individuals may be members of the Communist party. If they are, it is considered their duty to accept any espionage mission assigned to them by their Soviet masters. Other individuals may have compromising matters in their background which they would not dare to have made public. Such "skeletons in the closet" of persons in the target area are assiduously sought by the Communist recruiters. The threat of exposure is used to blackmail the victim into furnishing information to the Communist control agent.

If a prospective informant is known for his ultra-liberal views, the Communist approach is tailored to fit his views. Here we find the "Science knows no boundaries" or the "We work only for peace" approaches.

Unfortunately, there are Americans gullible enough to be taken in by these approaches.

Another standard approach to the intended informant is the "social" approach. Here some mutual interest, perhaps stamp collecting, photography or sports, is pretended and exploited.

In every approach and recruitment, the entrapment proceeds slowly. At first, the requests for information appear to be innocuous. Usually information is requested which is available from open sources.

Then, under some legitimate-appearing pretext, payment is offered, perhaps small sums at first. When the payments are accepted, the trap is sprung.

If the informant is reluctant to furnish classified information, he is threatened with exposure to the

authorities. This method is used even with American Communists, since it is suspected that they may still have in their veins a drop or two of patriotic blood.

The important aspects to remember are: First, that the intended source or informant must be in the target area and must be in a position to gain access to the desired information; and second, that the agents will ruthlessly exploit every conceivable approach to the victim.

Bribes, blackmail, sex, alcohol, narcotics and every other tool of Satan are their stock in trade. Like spiders, they gradually weave a web around their victim, using his own weaknesses to help them, until he is completely at their mercy—and they have 'no mercy!'

The end result is always the same—Communist espionage has gained still another channel of information.

I wish I could speak out even more strongly on this subject, using some recent cases we know of, because it's a subject on which I feel most strongly; but I am unable to do so in a public address at this time.

However, I say without fear of contradiction, that the advanced state of Soviet technology today is due more to Soviet success in espionage and subversion than it is to their scientific apparatus, good as it is.

I should like now to make two requests of you members of the American Society for Industrial Security.

My first request is to the industrial security officers. I ask that you always inform us immediately if classified papers are "mislaid" or lost. I ask also that you inform us immediately if you sense a pattern of an office or an individual consistently asking to see classified documents which are outside the normal area of interest of the office or individual—in other words, when there is no real "need to know." A pattern of espionage may be developing which, together, we can recognize and correct—as in the example of the Farben Industries I mentioned earlier.

My second request is to executives of our contracting firms: I ask that you give your complete support to your industrial security personnel. By this I mean not only policy guidance and executive direction, but also all the resources necessary to accomplish their mission, such as manpower and funds.

I suggest that these efforts will be well spent—not only from the standpoint of our national security, but also from the standpoint of giving better protection to your own trade secrets and proprietary information.

Now, let me restate and summarize my remarks today. I have made five main points:

1. The Communist threat to our Nation is real and proximate. We are in a life or death struggle. To win, to survive, we must develop a greater sense of urgency.

2. Our industrial base is essential to our national

security. It is therefore a principal target of Communist espionage and sabotage.

3. The Communist espionage apparatus is formidable. We must assume that their capacity for sabotage is equally formidable.

4. Industrial security is the key to defending our industrial base against Communist espionage and sabotage.

5. Industrial security is the primary responsibility—and proud privilege as well—of both management and the individual who has the classified information in his hands.

If he can't be trusted, safes are useless and security manuals are ridiculous—for our industrial security is compromised and our national survival is jeopardized.

It's our task, yours and mine, to help that individual person keep his trust and keep classified information secure.

I can think of no greater contribution we can make to keeping our Nation the Land of the Free *because* it's the Home of the Brave—and the Trustworthy!

Thank you very much.

#### *Technological Progress (Continued)*

an understanding of the relation of atoms, ions, and electrons inside materials. The atomic scientist is concerned with this problem. Basic to its solution is the knowing of nuclear forces. The answer to this problem, in turn, depends upon the identification and characterization of the elementary particles that make up nuclei. Thus in our attempt to solve the initial engineering problem, we have uncovered a whole hierarchy of problems, each one supported by an understanding at a more fundamental level. We always have the practical necessity of making a decision about our action. We can do it either with no supporting knowledge, or we can delve deeper and deeper toward the unattainable limit of 100% knowledge. Evidently, time urgency compels some compromise between these two extremes. In any case basic research is not defined by a sharp line of demarcation between different disciplines. In every scientific field we can conceive of basic research which results in pure knowledge. What is evidently needed is a clarification of basic and applied science in any specific investigation. There is a natural tendency, however, always to take the administratively easy road. Thus we set up "Restricted Areas." We enclose all basic research and development pertinent to a given project in a singly managed area; it is convenient to do so. So, too, in many contracts, inevitably requiring basic research, it is not surprising that one classifies a whole project alike to simplify fiscal and accounting procedures. We must admit also the possibility that the people who are doing the classifying themselves are not always quite sure as to how a technical investigation should be classified. The desire to be secure

(Continued on page 42)

#### *C. L. Johnson (Continued)*

entering. The general gives a good speech. It is highly secure. Why?

The Russians made thousands of MIG-15's. They know its performance better than we ever will. The Russian pilots know it. The American pilots from Korea know it. Many engineers can accurately compute it from a three-view drawing. But we sure kept it secret at that meeting! It's hard to explain why to your technical personnel.

#### *SECURITY VS. TECHNICAL PAPERS*

Any good technical man is anxious to publish the results of his work as soon as he is certain of its validity. Being human, he wants to get credit for his discovery or achievement and this can be most readily obtained through presenting technical papers to our numerous scientific societies. With the security lid on, he often works for years without recognition of his technical ability by many of his friends and associates. By the time the security lid is lifted, there is often no interest existing in his accomplishments. He therefore pays a price in reputation and often in income for being associated with a classified project.

A high degree of security also leads to duplication of effort by various government, industrial and other agencies. I have often seen cases where, if security rules could be lifted, such duplication could be avoided. There is no question but that security is costly in manpower (both technical and otherwise) and dollars. There are some who say that if we gave up all security measures and allowed a free flow of data to develop in publications, technical meetings and symposia, the technical level of intelligence would increase to the point where we would be farther ahead of any potential enemy than we could be with any security system. I, personally, do not believe this and am much more concerned with the duplication aspect resulting from our security system than in any trend to reduce it to zero.

Over-all, I think that we publish plenty of technical articles. Inevitably, many important articles get published which should not be. How good our security system is can best be judged when compared to others, like the Russian system. The complement to a security system is a system for gathering intelligence. In this field, I believe the Russians do a better job than we do. They have a specific bureau to gather, translate, and disseminate technical reports and data from sources all over the world. I am sure they find plenty of very helpful data in U. S. magazines, reports, and trade papers to repay them for their efforts. With our NATO agreements, we circulate a good deal of classified technical data in Europe which is probably fairly available to potential enemies, even with such controls as we are able to put on it. I have seen classified NACA data in engineering design rooms in Europe and wondered how much the classification meant in reality.

(Continued on next page)

**C. L. Johnson (Continued)**

Let me quote from the SOCIETY OF AUTOMOTIVE ENGINEERS' JOURNAL of August 1958, wherein Mr. T. W. Lippert, of the Titanium Metals Corporation of America, reports:

"The SAE JOURNAL and many other foreign technical publications are published in Russia directly (by photo-offset), usually within one month of their original publication date. I saw over 80 such magazines in my travels in Russia. The English version of the JOURNAL OF METALS (published by the American Institute of Mining and Metallurgical Engineers) is reprinted in greater quantities than in the U. S. The Russian technical man has studied upwards of 12 years of English and is usually quite adept at reading—and comprehending—such material. Abstracts are also made of all technical articles, and the complete papers are translated into Russian.

"That's why Russian engineers and scientists are much more aware of what's going on in this country by way of research programs, engineering developments, and personalities in their specialized fields than we expect. In turn, Russian scientists and engineers are professionally irritated because our people don't know what they are doing."

I would be very happy if we would oblige them in this matter. Sounds quite familiar, doesn't it?

Why do we not obtain, translate and disseminate Russian articles (including the charts and photographs, please) like they do ours? Some of these can be freely purchased in foreign countries. Some small efforts have been made from time to time to do this, but not on a large enough scale. Too often our intelligence system gets tangled up with our security systems, so that we promptly classify and hide data which is widely distributed abroad.

One of our biggest security problems seems to be that almost anyone can classify information, but very few can declassify it.

**HOW MUCH SECURITY DO WE ACTUALLY GET?**

We Americans make the fullest use of our right of free speech. Basically, we are a bunch of blatherskites! I have often thought that maintaining real security in the United States must be like trying to bale out a boat with a piece of screen for a dipper. Many of us make use of the list of "Selected United States Government Publications," published bi-weekly by the Government Printing Office. In all probability, the many reports published are carefully screened by security personnel prior to being released. But wouldn't it be interesting to be able to buy the Russian equivalent of some of the following reports, listed in the August 8th bulletin?

29P ASTRONAUTICS AND SPACE EXPLORATION 1542 pages-\$4.50

30P OUTER SPACE PROPULSION BY NUCLEAR ENERGY 232 pages-\$0.60

12P U. S. ARMY INSTALLATIONS, AND MAJOR ACTIVITIES IN THE CONTINENTAL UNITED STATES, 21 pages-\$0.20

7P SEMIANNUAL REPORT OF THE SECRETARY OF DEFENSE, AND THE SEMIANNUAL REPORTS OF THE SECRETARY OF THE ARMY, SECRETARY OF THE NAVY, SECRETARY OF THE AIR FORCE, JAN. 1 TO JUNE 30, 1957. 410 pages-\$1.25

I've not read any of them. They are probably very innocuous, but technical people wonder when they see these titles why they can't get some of their stuff released similarly.

You can buy excellent aerial survey pictures of practically the whole United States for about 35c a square mile. I use them to locate fence lines on my ranch. A wonderful service by government.

Go down to Oak Ridge in Tennessee and just try to get in without a real security check! But stop at the drugstore just outside the place and for 5c get an aerial photo on a post card showing the whole layout. A fine basis for making a radar-mapping picture, if anyone wanted to do it. Of course, any automobile map—or better yet, a 35c airways map—carefully locates our various major atomic installations.

With all of this, we can do a fine job of security on specific projects when we set our minds to it. I have always been amazed at how good a job was done on the Manhattan Project during the war, in spite of the major leaks that took place later. I am sure we have other projects which are similarly protected.

Over-all, I think we are getting as much security as our American system will stand in time of peace. I question whether it is enough in this period of cold war, which can get hot in half an hour. I am sure your conferences which will take place in the next few days will help us plug some leaks or potential leaks.

In summary, I would reflect my personal views regarding "The Scientist, the Engineer and Security" to be as follows:

1. We need a security system—if possible—better than the one we have now.

2. Many technical people are frustrated and discouraged by the red tape necessary to implement the system. This is inevitable when judgment on highly technical matters must be or is made by non-technical personnel.

3. In the end, the technical man must be his own censor. Give him more information on our basic security problems whenever possible and he will almost always respond to our security needs. Don't let security mean only a pass or a badge!

**Dr. Barnett (Continued)**

slovakia, for example, a Socialist leader named Masaryk tried to walk a "middle course" between Communism and Western Democracy. He ended up, still in the middle-of-the-road all right—but from nine stories up where someone had pushed him out of the window.

Although they are different, both Communism and Socialism confront American business with a mortal challenge—and we are in danger of being caught between hammer and anvil. The external threat is ubiquitous and terribly real; yet free men hesitate to oppose the Communist enemy on all fronts for fear we may gradually surrender our own civil liberties, economic freedoms and political liberties to Big Government here at home.

Is there any way out of the dilemma? One remedy is to apply the American genius for voluntary action to the realm of public affairs. But this requires that the managers of our business, banking and commercial society must make Public Affairs their avocation—their full-time hobby. They dare not hold aloof from political life and from hard intellectual effort. They will have to do their "homework" in philosophy and history. And they must not wait for another Pearl Harbor or giant depression to move them to prudent action.

Pearl Harbor proves a point—because Pearl Harbor was an event that permanently changed the lives, fortunes and future of every man in this room. Beyond that, Pearl Harbor radically revised American axioms about world geography and power politics. In a handful of minutes, Japanese dive-bombers not only sank our Pacific Fleet; they also torpedoed unreal assumptions about the technical capacity of "foreigners" and the use of trade or good will as effective means of deterring aggression.

We had thought that East was East and West was West. We learned the hard way that 20th century America is cheek by jowl with the Orient, that the Burma Road intersects with Main Street, that Tokyo and Berlin—and now Moscow and Peiping—are closer to Chicago than Philadelphia was to Boston at the time of the American Revolution.

These lessons were derived from the bombing of December 7th, 1941. But on December 6th, 1941, America was already at war, even though we didn't know it; for while it takes two to keep the peace, it takes only one to make war. So, as America slept, the carriers of Imperial Japan were converging on Hawaii. The bombs had been loaded, the pilots briefed, the mission assigned, the die cast for our people by war lords on the far side of the earth. We

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**Dr. Barnett (Continued)**

learned that war starts—not at the moment of the surprise attack—but when the enemy completes *his* final plans and commits *his* resources to conflict.

Again we are at war—a new kind of war with unorthodox rules and camouflaged weapons. Our failure to recognize that fact does not affect the designs of the Kremlin. Again, it is an enemy—not ourselves—who has decided to involve the United States in conflict. Again, our own good intentions are beside the point. And, again, there is danger our country may drowse through the afternoon of its December 6th, through a night of no return, into another kind of Pearl Harbor—where the hour and the place, and the cost and the sacrifice are all determined by factors outside our control.

Only this time, the odds are much heavier against America than on that other December 6th, sixteen years ago. What if, in 1941, the power of Japan had already swallowed two-fifths of the earth? What if Japanese science had in some respects surpassed our own? What if Tokyo had dominated a billion people whose labor could be coerced to the cause of conquest? What if her fifth columns had penetrated every country in the world, including the United States? What if Japan had vast natural resources, abundant water power, access to oil, no need to import steel or coal? And what if Japanese submarines and bombers, armed with atomic weapons, had been based as close as Alaska, Mexico, Canada, Catalina, Nantucket, Key West and Bermuda? The equivalent of this nightmare supposition has come to pass since 1945, with the Soviet conquest of space and the invention of guided missiles—with the manpower of China and the resources of Eastern Europe feeding the Communist war machine—and with India, the wealth of Indonesia and the oil-rich Middle East only three assassinations and a few street fights removed from the grasp of the Kremlin.

In short, an Asiatic conqueror stands on our frontier. Owing to science, the Atlantic Ocean is no wider than the Rio Grande. Owing to technology, the Pacific is no broader than Lake Michigan; and the wastelands of the North can be bridged in a few hours' flight. We Americans are face to face with the descendants of Genghis Khan.

Indeed, television brings Mr. Khrushchev into millions of American living rooms to lecture on the glories and inevitable triumphs of World Socialism. When a Soviet leader denounces Wall Street monopolies, his message is transmitted free of charge on the front pages of American newspapers and contributes to the general climate of opinion in this country.

***His Armies Practice "Conquest by Communication"***

Khrushchev & Co. are no longer a rude barbarian horde. They are disciplined in science and well-armed

with engineering. They are schooled in economics and political theory. They speak many languages. They have learned to use education, literature, art, trade and even religion as weapons of subversion. Above all, they are superbly trained in the conduct of symbol-warfare—in *conquest by communication* and *warfare by words*.

***The Military Cannot Defend America Against Symbol-Warfare***

That is why we must talk about management's responsibility for Public Affairs and National Security. In the past, wars were chiefly shooting matches, and businessmen naturally left Defense problems in the hands of America's soldiers. Today, the front is everywhere. Certain intangibles can literally "wash out" the material foundations of Defense. If the world climate of opinion is mobilized against us by propaganda, we will lose markets, air bases and access to strategic raw materials. If, here at home, we lose the will to sacrifice or cynically disregard our spiritual traditions our physical wealth will not safeguard American Civilization. Today, National Defense begins at the level of domestic political morality, the quality of citizenship training for our youth, and the reputation of American business growth both here and abroad. These "intangibles" are the clear responsibility of private citizens.

***We Are Faced With the Problem of National Survival***

Ancient Carthage, with its luxury standard of living, refused to make minimum sacrifices to support Hannibal and did not survive. Cato's relentless chant—"Carthage must be destroyed"—did not awaken the indolent Africans from their preoccupation with business-as-usual. They couldn't believe that Cato, like Khrushchev, meant what he threatened. Similarly, Rome itself, entertained with bread-and-circuses and arrogant in its splendor, did not *survive* the onslaught of the Vandals and Visigoths. The technical skill that built her roads and aqueducts, the "know-how" of her administrators, the glory of her law—none of these assets saved an effete and over-civilized Rome.

Nor did Rome's Gross National Product protect her. The Visigoths had no GNP whatsoever—only weapons and will power. These dismal comments on Carthage and Rome could be repeated for other proud civilizations. Many times in the past, nations with high standards of living have been pushed to the grave by nations with low standards of dying.

History teaches us that when a people put indulgence before discipline, worship welfare and discourage risk-taking, they are likely soon to be forced into bankruptcy by a more vital Competition. Especially if they no longer believe in themselves. For nearly twenty-five years this country has been confused by a Cult of Doubt. Too many Americans suffer an odd guilt complex about their own way of life. Meanwhile the missionaries and conquistadors of the Com-

unist Church Militant advance Marxism as the one true faith—and they are willing to die for their belief. That is why the battles of the Cold War are fought on our side of the Iron Curtain and at the Kremlin's initiative. That is why trying to contain Communism with a Maginot line of dollars and diplomacy is bound to fail. We forget that no *status quo* power has ever checked the thrust of a dynamic barbarian—for even if the "Defense" is ninety percent successful on every occasion, a civilization can be driven to its doom ten yards at a time.

#### *The Soviets Have Made Startling Technical Gains*

In 1945, America enjoyed absolute air-atomic supremacy. In less than a decade, Russia has broken our monopoly in nuclear weapons, beaten us into space, produced jet aircraft and tested guided missiles. A system once contemptuously called the "ox-cart economy" has built the world's second largest navy, graduates more than twice as many engineers as America, and, by ruthlessly disregarding the claims of its consumers, is out-producing us in heavy machine tools, the basic equipment of war.

#### *The Real Threat: Soviet Fourth Dimensional Warfare*

But the greatest threat to our civilization may not stem from Soviet guided missiles or engineering of atomic weapons. We have brilliant scientists, able generals and inventive industrialists who doubtless can safeguard National Security on the technological front. It is in the realm of "Fourth Dimensional Warfare"—or psychosocial combat—that we are hopelessly outclassed. We know a lot about the tricks and techniques of mass persuasion—but we have not yet applied that knowledge to the main challenge of our time—how to beat Communism without fighting a hot war.

We use advertising skills and the "hidden persuaders" to change consumer taste in salad dressing. We use high-powered public relations to boost the box-office appeal of a rock-and-roll cowboy. The Soviets exploit Pavlov, propaganda and group dynamics to overthrow empires and condition the masses to become addicts of Socialism. They use psychology to win the world.

Propaganda has always been a tool of the Conqueror. In the age of radio, television and mass literacy, however, political warfare has become a *primary* weapon. The Communists, like the Nazis before them, use the strategy of terror to frighten the West into inaction, to promote class warfare and thus divide and conquer, to encourage neutrals to ride the Soviet wave of the future. The danger of the Russian *sputnik* is not just that it means Moscow can probably put a missile on New York or, in the near future, aim atomic guns at Pittsburgh and Detroit from a platform in outer space. *Sputnik* is a symbol of Successful Socialism. All over the world, intellectuals and politicians—already half in love with Marx—are saying; "If Social-

ism can do such wonderful things in science, why not give it another chance with business? If Communism is efficient in the laboratory, let's try it in our factories. If Marxism can plan a *sputnik* and build so many splendid schools of engineering, we must have Social planning and Social engineering for every part of our society. Capitalism is obsolete."

Despite the record of American enterprise, millions of people—including some in this country—will believe that propaganda. Why? Because very few Americans can articulate what it is we really stand for. We perform, but performance is not enough in an age of mass media. The Communists capture the slogans, manipulate the symbols, pervert the communications. The *facts* are on our side; but facts don't necessarily move men to action. More often, men are motivated by *theories*, by hopes and hatreds, by envy, fear or inspiration. The Communists have done their homework in the human subconscious. From superstitions and buried emotions and bedrock beliefs, they have mixed the weapons of fourth dimensional warfare.

They have put this knowledge to practical use. With blackmail and infiltration, they captured Czechoslovakia without firing a shot. That meant they got the Skoda Works intact. For thirty years Moscow trained many oriental Communists in its academies of political warfare. The alumni are today the rulers of Red China, the overlords of North Korea, the leaders of the Communist thrust into Southeast Asia. No Russian soldiers died to score these victories. In recent months, Communism has won elections in India, Indonesia and South America. It has penetrated Syria and Egypt. It is growing like a weed in the fertile fields of Africa. It controls powerful party machines in France and Italy. Communist political strategy, in short, is not an ivory tower experiment. It pays Moscow huge dividends in real estate, military bases, raw materials, manpower—and continuous trouble for the United States.

These things don't happen by accident. Communism is not just an idea; it is a power-technique. Behind the Iron Curtain, there are more than 100 schools and colleges of propaganda and subversion. Many Russians get a first-class education in math, physics, and foreign languages. But other Russians—and selected recruits from Asia, Africa and Latin America—receive professional training in Conflict Management and psychological tactics. We have the Harvard School of Business; they have the Lenin Institute of Political Warfare—for politics is the chief business of Communism.

It is imperative, of course, for this nation to win the contest of science, electronics and military hardware. Otherwise, the Soviets will blackmail us into surrender. But we cannot guarantee our security by simply catching up or staying ahead in science. After all, we were ahead of them for thirty-five years when,

*(Continued on next page)*

**Dr. Barnett (Continued)**

in spite of our technological superiority, they scored victories by irregular methods. We must create a shield of science to ward off a hot war; but we must also learn to make stronger moves on the ideological, political and economic squares of the Cold War Chessboard.

To do that, we must raise the standards and improve the quality of education in economics and philosophy, American history, political science and foreign languages—as well as in science and engineering. And we must not be afraid of competition in the classroom, for young America in the next two decades is going to face the most ruthless competition the world has ever known.

American Business cannot afford to be a mere spectator at this match for the future of mankind. The "managers" of Soviet Society are all committed to agitation and politics. They are conflict minded. You can't do business with Moscow, because Communists are not businessmen or statesmen. They are professional revolutionaries. Their foreign aid personnel are commandos; their artists are propagandists; their diplomats are spies; their economy is based on the cost accounting of the battle field, where every resource is squandered in order to defeat the enemy. Since Communists have a combat mentality, you can't reason with them. If we don't want to fight them—or surrender—we must learn to beat them in the precincts of the Middle East, in the lobbies of the United Nations, in our own classrooms and pulpits, and before the court of world opinion. Our own managers dare not be aloof to this challenge.

The Communist Party, through the apparatus of *total* government, can mobilize the total resources of the Sino-Soviet Empire. Our limited government, by definition, cannot and should not compete with Moscow across the board. If it did, Washington would have to regulate business, control the press, police our schools and regiment our voluntary agencies. This means that, unless private institutions take over many areas of non-military defense, the ubiquitous thrust of Communist Conflict Management will be unchecked at crucial points.

Why should business be asked to serve? Primarily, because our *economic* system is the crux of the whole struggle—and because, in a sense, this is the Business Society. Each year, a very high percentage of our college graduates are recruited by Business. Although there are extremely able men in other walks of life, our greatest reservoirs of inventive talent, drive, organizational vitality and brainpower lie in the world of industry, commerce and finance. Yet, with certain notable exceptions, Business Leadership has not taken full responsibility for safeguarding the moral, intellectual and political framework which ensures its op-

portunities to make the economic system "pay off" for all America.

**Businessmen Cannot Stand Aloof From Politics**

This Republic was founded, of course, by bankers and lawyers, businessmen and a general. The frontier was "civilized" by business leaders who took an active part in the *citizenship function*. Today, however, many business leaders regard "politics" as beneath their dignity. Unfortunately, American civilization can be crippled—and even destroyed—by concepts which lead first to changes in the "climate of opinion" and, ultimately, to the *hard facts* of power politics.

If the "Business Society" is destroyed outright—or simply "withered" by politics and propaganda—business leadership has only itself to blame. After all, every great corporation has more than enough "surplus" to allow some of its best brains to stop thinking about production and sales and start thinking about National Defense, Citizenship Education, Foreign Policy and Economic Philosophy. One way for business to attack these complex problems systematically—and with sophistication—would be to build an Academy of Industrial Statesmanship. This would be, in effect, the equivalent of the Harvard School of Advanced Management in the area of Public Affairs, National Defense, Citizenship Training, and the "theology" of American-style capitalism. Its purpose would be to produce articulate champions of freedom who could compete with the lobbyists for Marx in the never-ending battle to condition the climate of opinion.

Another place to improve the machinery of Ideological Defense might be with the lever of Corporate Philanthropy. American Business now gives to good causes more than \$500 million a year. Perhaps 5% of that total should be used to pay a cultural life insurance premium on America, in the light of Khrushchev's boast that our grandchildren will live in a Soviet Socialist America. Recent events suggest at least three more questions about private philanthropy

1. If the Soviet challenge is not to result in eventual Federal control of our schools, must not business give even more generously to improve the quality of American education?
2. Cannot business get much more for its charitable dollar by applying the some professional standards to giving away money that it does to making it in the first place?
3. Should not industry begin to reappraise its pattern of giving—shifting some investments from the portfolio of community welfare to the portfolio of National Survival, allocating priorities, evaluating results and, in general, managing corporate largesse with the same discrimination and purpose that mark other phases of business operations?

### *Goals For the Future: Vice-Presidents of Public Affairs*

Ultimately, it may be desirable—even necessary—for great corporations to appoint Vice-Presidents of Public Affairs to spend full time on these matters. A waste of talent? At the beginning of the century, certain firms refused to adopt advertising. They perished. Now, most firms are hospitable to the subtler meanings of Public Relations. But beyond orthodox "public relations" lies the arena of Public Affairs in which the fate of American Civilization may well be decided in the next decade.

### *The Ultimate Weapon*

One word more. The ultimate weapon is neither science nor politics nor psychological warfare. The ultimate weapon is human courage—and faith in certain unalterable moral laws. Unfortunately, some people have forgotten the true meaning of America. We are already half afraid of the honorable word "revolution," although we are the true revolutionaries. It was an American Revolution that gave the world its finest revolutionary ideal—the notion that government is the servant, not the master, of the people. The Communists—who call us "reactionary"—have turned society back to the days of the Pharaohs. The monuments to "Socialist Progress" erected in the USSR—like the pyramids of ancient Egypt—have been built with slave labor.

### *We Must Not Perish Through Failure to Recruit Our Elite*

On the other hand, we Americans have developed the most flexible, continually progressing society known to man. Our so-called "masses" already enjoy luxuries undreamed of in other parts of the world. Our unique type of capitalism—almost as different from European cartel-capitalism as it is from Socialism—produces more welfare and more social justice than Communist Functionaries would even dare to imagine. But beyond that is the fact that we are truly free men. We have plenty AND freedom, together. We must not let this remarkable experiment in human liberty and opportunity perish from want of courage, or lack of sophistication, or failure to meet the problem with the ablest human resources at our disposal. That is why the question of "National Defense Strategy" urgently requires the attention of this audience.

ASIS is, of course, doing a magnificent job through the professional, day-to day activities of its members. ASIS has also sponsored the Military-Industrial Conference in Chicago which seeks to deal with "security" on the broadest possible front. You may be encouraged to know that the Institute for American Strategy has now been incorporated; its purpose is to mobilize the business, commercial and professional communities for what might be called "non-military defense." With the endorsement and support of groups like ASIS, the Institute can infuse into the mainstream of Ameri-

can life the will, resolution and sophistical understanding of strategy which the nation requires to survive.

The task may seem enormous; but the stakes are even higher. And let us remember that great events are always determined by minorities. Forty years ago Communism was confined to a rented room in Zurich, the brains of Lenin and the ambition of a few other outcasts. Less than 100 men made the American Revolution. For a time the whole future of this nation was carried in the will and heart of a lonely man who walked the winter lines at Valley Forge persuading his ragged countrymen not to quit and go home. There is more than enough talent in this one room to change the course of history. But time is impartial. In politics and war, as in business, time is only on that side which knows how to use it.

### *A. T. Deere (Continued)*

an intangible value. They form the integral parts of today's page in the history of the Society; in their composite, they become the uppermost rung of the ladder leading to the ultimate success of the Society. Hence, these men and women are builders; and, as they hand over their tools at the end of the year, their accomplishments become the "past" that is the prologue to the future of the Society.

"Heaven is not reached at a single bound;  
But we build the ladder by which we rise  
From the lowly earth to the vaulted skies,  
And we mount to its summit round by round."

With great optimism, I conclude my year as President. Our Society has a real destiny. In the near future, it shall have attained its proper growth, and its stature and prestige shall compare favorably with those of the other great professional societies.

I offer one admonition. Let us keep our Society wholesome, and let its purpose always be for the general benefit of its members. There are those who now enjoy Society membership principally for the purpose of obtaining entree to the offices of other Society members. Use of our membership for this purpose must be discouraged. We are the world's leaders in our chosen profession, and we cannot permit our ranks to be infiltrated by those who would wantonly weaken our Society, perhaps ultimately destroy it.

Let us not lose our enthusiasm, nor our attained momentum. We must press on until we are strong in every geographical area of the nation and in every phase of our activity. We must pledge our unreserved support to our new officers. It is my sincere hope that your individual and collective response to the leadership of our new president equals that which has been mine to enjoy during 1958.

### **Keen Johnson (Continued)**

\$4,000 to put a salesman on the payroll, give him sales training instructions and prepare him for assignment. The cost is substantially higher in supervisory and executive positions. It is obvious that there is a specific dollar saving every time a security investigation prevents such a mistake in employment. It is an expensive and unnecessary gamble. . . .

As those of you engaged in industrial security associate yourselves together there is provided opportunity to exchange information on the functions in which you are engaged, to your mutual benefit. Those guards under your supervision in the industrial plants of your company can create a good impression with the public if they are courteous, have the faculty of getting along with people. I had occasion to visit a large industrial operation recently. I drove to the plant with a member of our sales organization. We were smilingly received by the guard on the gate and cleared for admittance. It was raining very hard. The guard handed us an umbrella and said, "I will park your car. When you are ready to go, have the receptionist call me and I will bring it back for you." That guard had no technical knowledge about Public Relations, but he practiced it in an effective way. He was creating good will for his company—being courteous to visitors. Those plant guards can become ambassadors of good will for your corporation, if they are given proper instruction, indoctrinated with the story of your company and its industry. I have had experience with other plant guards who were curt instead of courteous—whose demeanor was like that of a hard-boiled army drill sergeant. They leave a bad impression on visitors, reflect discreditably on their company . . . .

There is an unjustified inclination to be critical of big business—and many of you are associated with industries in that category. I would suggest that those under your supervision be informed of the elemental economic facts of corporate operations. When a recession comes along there are many who blame the adversity on big business. When diminished demand for products of the assembly line makes it unavoidable that production be curtailed, workers laid off, there are those who charge that such is the fault of the big corporations. These critics become vocal in their criticism of our profit and loss system, the capitalism system. But it is the only economic system that is founded on character and credit—and the system is constantly policed by competition. And lovers of liberty should not overlook the fact that in all history, individual freedom never has existed except under a capitalistic system.

A nationwide survey recently indicated that 60% of our people think that corporations, big business, make an average profit of 25%. They thought that too high. They indicated that about 10% would be a reasonable profit. The combined sales of 1,017 most

important companies whose stocks are listed on the New York Stock Exchange totaled 233-1/2 billion dollars in 1957. Their combined net profit was \$16-1/2 billion. That represented a profit on sales of 7%. Yet in this highly literate nation, 60% of our people are under the impression that profits are 25%—regard 10% as reasonable.

A survey submitted to workers in industry this question: "Out of every dollar paid in dividends to stockholders, salaries to top management, and wages to workers, how much of this dollar do you think the worker gets?" Workers thought they received 25 cents of the dollar and top management and stockholders got 75 cents. The fact is the workers, instead of getting 25 cents get 85 cents; top management and stockholders get 15 cents. In the 28 years from 1929 to 1956 the combined profits of all American corporations was three and eight-tenths per cent on total sales. It requires an average investment of \$12,000 to create one job in industry. It is even higher in the aluminum industry—about \$14,000. When you walk through a factory just remember somebody, stockholder or financier, invested \$12,000 to create the job opportunity for each worker operating those machines. And they made the investment only because they expected dividends on their money.

In July we observed the anniversary of American freedom. July 4 is a significant day in that it marks the birthday of freedom. But July contains a freedom day for American corporations such as the company I represent. For us, July 7 is freedom day. What do I mean by that? I mean that the corporations in the category of so-called big business worked from January 1 until July 7 just to pay their taxes. It is not until July 8 that they start working for their stockholders.

Between 1930 and 1956 the number of private employee pension plans in industry increased from 720 to 23,000. Group life insurance plans increased from 19,000 to 160,000. And no corruption has been disclosed in fund administered solely by employers.

These represent some of the elementary facts of business economics that many people do not understand. The result is that many people reach wrong conclusions as to corporate profits. People are down on things they are not up on. . . .

Much of the technological progress in the last two decades has resulted from expensive research programs conducted by industry, results of which have been beneficial to all our people. For example, we secure six times as much energy from a ton of coal as was extracted in 1900. Research can be financed only by corporations with substantial resources. More than 8 billion dollars was spent in 1957 for research. 70% of the expenditure for research is made by companies that employ more than 5000. Yet small business, the entire nation benefits from this research. So big business is a blessing.

The average manufacturing company requires 3 hours and 55 minutes operation in an 8-hour day to pay for materials and supplies. Wages and salaries account for 2 hours and 19 minutes more. Taxes, repair and replacement of facilities, research and production, consume the income for most of the rest of the day. Finally there are 19 minutes left to go into profits and almost half of that is earmarked for reinvestment in the business.

America can no more survive and grow without big business than it can without small business. Every fact proves the two are interdependent. You cannot strengthen one by weakening the other; you cannot add to the stature of a dwarf by cutting off the leg of a giant. Critics misrepresent individualists as money-grabbing plutocrats. Samuel Gompers, the pioneer in the labor movement, said, "The worst crime against working people is a company which fails to operate at a profit." This is especially true in modern industry because it is more vital than ever to welfare of the worker that his Company make a profit. Not only does that profit guarantee his pay check, but the retirement benefits program and unemployment compensation can be kept sound and solvent only if the operation in which the worker is engaged, makes a profit sufficient to finance these worker benefits . . .

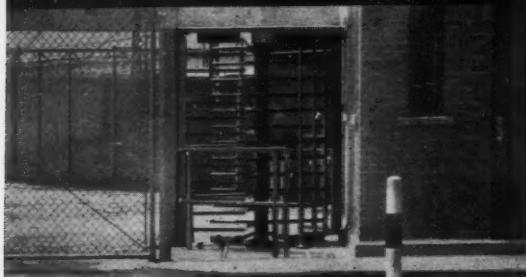
#### *George Bisset (Continued)*

The fact that we have become accustomed to such an abundance of electrical power has generated certain problem areas which were practically non-existent a few years ago. I am thinking of our almost complete dependence on electric power in our present way of life. We, in the industry are very conscious of this situation. If from time to time it appears that we are inclined to forget that such a condition exists, let me assure you that we are very forcefully reminded by our customers during emergency conditions, such as occurred during Hurricane Hazel or the recent wet and heavy snowstorm which we experienced this past spring.

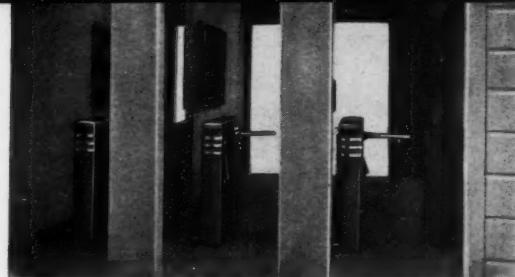
Our position as a leader in the present day world and our capability as a top military power would be seriously jeopardized if we were to lose all or a substantial part of our electrical energy for an extended period of time. Imagine what would happen in any of our large metropolitan areas if the electric power were suddenly interrupted and remained off for any appreciable period. First of all, there would be no water, no sewerage treatment and disposal, and only limited transportation. The loss of refrigeration and fuel preservation, together with the substantial reduction of transportation into the city would soon leave

*(Continued on next page)*

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### *George Bisset (Continued)*

our large metropolitan areas with a population who could remain only to face almost certain starvation. Even if it were possible to provide a limited amount of food for certain key industrial personnel, they would be of little help in factories which had been denied the light and power which are so necessary to their operations. Add to this the many serious conditions affecting the home life of our people and we must conclude, that deprived of power, life in our modern cities would not only be difficult, but impossible.

If we are to protect the electric power industry from the effects from possible sabotage, we will have to know a little about how a typical power company operates, and just what it looks like. Accordingly, let us take a look at the company which serves this Metropolitan Area. The Potomac Electric Power Company operates in an area of some 640 square miles which includes about 1,500,000 population and covers the District of Columbia, over 50% of Prince George's and Montgomery Counties in Maryland and a small part of Arlington County in Virginia.

Our territory is roughly rectangular in shape and is approximately 40 miles in length and 15 miles wide. The District of Columbia comprises about 70 square miles of total area and is approximately the geographic center of the territory served. Although our territory does not include any large factories, the plant is typical of an electric power company serving a metropolitan area.

Modern power systems, such as the one which serves this area, normally include:

- a. One or more generating stations which produce the electrical energy for use by the ultimate customer.
- b. *Transmission and subtransmission lines* operating at high voltage to carry large blocks of power from the generating station to substations at local load centers, other generating stations or to interconnect adjacent power companies.
- c. *Substations* which reduce the voltage at load center to facilitate the distribution of the electric energy.
- d. *Distribution facilities*, including feeders and transformers, to distribute the power and further lower the voltage to a value more readily usable by the customer.

The system furnishing power to the nation's capital includes three separate generating stations, two of which are located in the District of Columbia and one in Alexandria, Virginia—all within a comparatively short radius. By the summer of next year another generating station located at Dickerson, Maryland, some 40 miles to the northwest of Washington at the confluence of the Monocacy and Potomac Rivers, will be added to our system. The three existing stations are presently connected together by underground trans-

mission lines operating at 33 thousand and 69 thousand volts.

In addition to the generating stations, our company has three other sources of power through interconnections to other electric power companies to the north. These interconnections are made through high voltage overhead lines supported on steel towers of the type I am sure you have seen in the countryside throughout the United States.

When completed, our new generating station will be connected to our system through a 220,000 volt transmission line which will form a half ring around the city to the north and east of Washington.

Radiating from the three generating stations are numerous high voltage transmission and subtransmission feeders, which supply electric energy to the substations at local load centers. At these substations, of which there are presently 110 in the local area, the voltage is reduced and the power continues on its way over 4,000 volt primary distribution feeders. A further reduction in voltage to the value used in a normal household is accomplished through the installation of small overhead or underground distribution transformers connected to the primary distribution feeders at points 200 to 600 feet apart.

Of the various elements of the modern electric power system which I have just described, the most important from the standpoint of the effects of sabotage, is certainly the generating station. Whether it be hydroelectric or steam, it is the very heart of the power system. It is here that the fuel, or the energy of falling water, is converted into electric energy. Today's stations are large and they contain complicated and sensitive mechanisms. Present day boilers, such as those installed at our Potomac River Generating Station produce 725,000 pounds of steam per hour at a temperature of 1,050° and a pressure of 1,800 pounds per square inch. The tremendous energy stored in the steam under these conditions could be disastrous if not properly controlled at all times. The failure of a fan, a water pump, or a coal feeder may result in partial or complete shutdown of a generator. The loss of station service power would most certainly lead to a shutdown of all of the generators at a power station.

The large steam generating stations now operating require many millions of gallons of water each hour for cooling purposes. In fact, during peak conditions the three stations operated by our company will use more than 5 times the quantity of water required for the entire city of Washington.

As a result of this substantial requirement for water, steam generating plants are normally located adjacent to a river or other large body of water. Normally the water enters the generating plant through a screen house located at the river's edge. This screen house contains a trash rack and a travelling screen which remove the debris from the water, and in some cases

the building also houses the necessary water pumps. Because of its exposure to the water and the fact that, if demolished, the entire generating station would be shut down, the screen house is probably the most vulnerable spot for possible sabotage at steam generating stations. A partially submerged mine can easily escape the apron wall and explode against the trash rack or the travelling screens. If the mine were floating on top of the water, it would probably explode upon contact with the apron wall. While this could be quite serious, depending on the power of the mine, it very probably would not be as effective as a mine which exploded at the trash rack inside the building.

Other facilities which are normally located in the plant yard and which may be prime targets for saboteurs include the station service transformers and the coal conveyors.

As I have noted, there are numerous auxiliaries in the plant building which are essential to the generator operation. Since the operation of these auxiliaries is generally dependent on power furnished through the station service transformers, it is apparent that possible sabotage of these facilities represents a very serious threat to the ability of our plant to produce electric energy. This threat becomes a real problem when the transformers are located in the station yard where they may be observed from outside the plant

enclosure. Depending on the transformer location, a few well directed shots from a high-powered rifle from either the river side or the land side of the station could take the entire plant out of service for an appreciable time. Such a shot could rupture the radiator or pierce the metal casings and short the windings. In either case, the transformers could be damaged seriously and the plant would be shut down.

The coal conveyors are in a different category than the station service transformers, both with respect to their importance and the difficulty of effective sabotage. While it is true that the plant will not operate without adequate fuel, many of our modern stations are designed to burn either coal, gas or oil. In any event, loss of the coal conveyors would not immediately affect the ability of the plant to generate power, since coal in the bunkers would, in many cases, be sufficient to maintain the plant in operation for two days or more during peak load seasons. Another consideration in this regard is the fact that effective sabotage against the coal conveyer would very probably require explosives carefully placed in the motor, gear box, or conveyer support—and this normally could not be accomplished without entering the enclosed area surrounding the plant.

(Continued on next page)

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### *George Bisset (Continued)*

While it is relatively simple to exclude unauthorized persons from a generating station building and the surrounding enclosed area, protection against the introduction of explosives may be much more difficult. Coal burning plants such as those on the Washington System, require thousands of tons of coal each day to produce the vast quantities of energy required by the customers. In the Washington area this fuel is normally delivered to the plants by rail, and there may be as many as 80 coal cars entering a single plant during a 24 hour period. An explosive charge hidden in the coal could easily result in serious damage to the various coal handling facilities within the plant area. Because of the many processes through which the coal passes, prior to combustion, it does not appear likely that any hidden charge would reach the furnace. However, the operation of unloading facilities, breakers and crushers, coal conveyers, magnetic separators and even pulverizers could certainly be jeopardized by the presence of unknown explosives in the fuel. When we realize that the coal car may have three or four hundred miles of exposure en route to the generating station, the importance of considering this method of sabotage as a real possibility becomes apparent.

Although steam plants account for 80% of the electrical output in this country, hydro-electric plants produce about 20% of the total, and represent a very important source of energy in many sections of the country. These plants are normally constructed in a body of water and are always associated with a large dam. For example, the hydro-electric development, near Lancaster, Pennsylvania, includes a dam 62 feet high and almost a mile long. Here we have 4,900 feet of exposure to sabotage. Underwater charges of the power required to create an opening in the dam would result in loss of head necessary to the generation of power. Other methods of sabotage which would be effective in shutting down the plant include the floating of partially submerged mines from the fore-bay into the intake of the turbine. These mines may explode against the trash screens or they may be set off by a contact with the turbine blades. While an explosion against the screens would cause considerable damage, a charge set off at the turbine blades would be much more serious.

In discussing the problems of sabotage at generating stations, I have thus far confined my remarks to those major facilities which may be damaged from outside the plant building. To damage equipment from inside the plant structure the saboteur must first gain entrance to the building; however, having done so there are countless ways in which the plant may be shut down, many of which would involve only passive methods of sabotage. Iron filings, sand or grit could be effectively used to damage bearings and jour-

nals on turbo-generator units or auxiliary equipment. Opportunities for active methods of sabotage are likewise very much in evidence inside the plant structure. Turbo-generators, condensers, feed water pumps, circulating water pumps and fans are all candidates for active sabotage which would result in the elimination of the plant as a source of energy.

All the electric energy generated at our power stations is useless unless a means is provided to deliver it to the ultimate consumer. The first step in this process is to transmit the power from the generating station to substations at local load centers over high voltage transmission lines. These lines may be in underground ducts or installed overhead on wood poles or steel towers. In urban areas, transmission lines are normally placed in underground ducts which lie below our public streets and sidewalks. Access to these cables is gained through manholes in the street through openings which are sealed by manhole covers. Normally, in order to reduce the blast effects in the event of underground explosion, these covers are not locked. The very nature of this construction makes these cables extremely vulnerable to sabotage, particularly since they are located in areas available to the general public. An explosive charge placed in one of these enclosures would open the circuit and probably damage the cable to an extent requiring days to repair.

Overhead lines are even more vulnerable, for here we have a facility which is clearly visible and subject to being traced from the source to the load center or interconnection point. This I believe is a most vital consideration, since a trained observer can not only damage the line but also evaluate its importance to the system as a whole. Obviously, a feeder of this type which can be identified as a tie between a generating station and an important local load center, would be an extremely attractive target for the saboteur. Similarly, high voltage transmission lines between cities or generating stations would most certainly appeal to the enemy agent. Not only can the observer evaluate the importance of the feeder, but he is also quite free in the sparsely settled suburban and local areas to pursue his objective unmolested. A properly placed charge at the base of a steel tower would quickly separate the electrical interconnection between two cities, two generating stations, or a generating station and a major load center.

Our next important element in the modern electric power system is the substation. Normally all transmission and subtransmission lines terminate at a switching center or a substation which usually supplies a local area. These stations vary in size from those which occupy five to ten acres, to the small residential type which may be housed in a building the size of a normal six-room home. In either case the large power transformers and associated switchgear are enclosed by a high fence or installed in a building. Many

of these stations are unattended and normally there are no guards assigned. Severe damage to the transformers or switchgear should not be difficult for the trained saboteur to accomplish, particularly in the outdoor type of station. While distribution feeders which leave the substations, are quite important as a group, they do not represent an important element individually. Damage to a distribution feeder would normally affect only about 1300 customers and the loss of a distribution transformer would result in a power cut-off to approximately 15 or 20 customers.

I have attempted to point out areas of possible sabotage in a typical electric power system serving a metropolitan area. From the discussion I am sure it is quite evident that an electric power company is quite susceptible to sabotage, and that a well-informed person who is free to operate could seriously damage our facilities. The question is . . . . what can be done about this situation and what is being done?

I believe that it is safe to say that electric power systems generally have not been designed with sabotage in mind; however, recognizing the necessity of uninterrupted service, our design engineers have carefully built an important safety factor into our systems which, in the event of sabotage, will have a very favorable effect. I am thinking here of the backup . . . . the duplication of facilities which has been built into our plant. In general the system is so designed

that we can lose any one major facility during peak conditions without interruption to service. For example, we can lose any one generator and still provide the power necessary for the metropolitan area. Sabotage to the 230,000 volt transmission line from nearby Maryland to Pennsylvania, would not normally even be noticed by our customers. Likewise, an individual transmission feeder or a substation may be lost without adversely affecting the supply of power to our customers.

Of course, our problem arises when more than one major facility is threatened—sabotage resulting in the loss of the complete generating station with as many as 10 generators, would seriously affect the flow of electric energy to the area.

Although our system is designed to withstand the loss of any one major facility, it is quite evident that positive action to protect against sabotage . . . as well as reduce the effects of sabotage . . . is indicated.

In this connection, let me take a minute to describe some of the means used by the company with which I am associated. At the present time the company maintains a Police Force of over seventy special officers. In addition to this force, we have nine guards under contract. All of the guard personnel are armed and commissioned as special officers in the jurisdiction in which they work. Each of the generating stations is

(Continued on next page)

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**GLEN RIDDLE**

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*George Bisset (Continued)*

enclosed by a six-foot chain link fence topped by one foot of barbed wire installed on angle brackets. Guards are on duty around the clock and permanent posts are established at all entrances, screen houses and other vital points. Entrance to the plant is denied to all except authorized personnel. Personnel normally assigned to the station must be properly identified before entering. Employees not normally assigned to a station are required to register and identify themselves prior to admittance.

Recognizing the importance of loyal personnel, the company carefully checks each prospective employee. Personnel are provided with a laminated identification card which includes the holder's photograph and fingerprints. As an additional precaution, the fingerprints of each employee are furnished to the Federal Bureau of Investigation. We also maintain a close liaison with the Office of the Assistant Chief of Staff G-2, Military District of Washington, and the local Police Force.

Since overhead transportation, subtransmission and distribution feeders are easily located, by even the casual observer, it is quite important that the distribution of information relating to the connections and routes of such feeders be furnished only on a need-to-know basis. In our company such wiring diagrams and feeder route maps are furnished only to those persons and agencies who have a proven need for the information. In the absence of such information, the would-be saboteur will find it most difficult to select a vital pole or line to damage . . . particularly when we consider that on the local system there are over 3,500 pole miles of overhead line currently in operation.

Intercity transmission lines however, are obviously important and the high steel towers are easily spotted and traced. Because of the difficulty of protecting these facilities, I believe that, from the standpoint of security, this is certainly one of the more vital problem areas. While these lines are normally patrolled periodically, positive around-the-clock protection has not been practical. During World War II, the patrol on many of these lines was increased and arrangements were made with the residents living in the area to report any unusual or suspicious conditions. But even under this plan it can hardly be said that positive protection was in effect, since each section of the line was patrolled only about twice a week. The most effective protection in this case seems to be to minimize the effects of sabotage by maintaining sufficient spare towers and associated hardware in storage.

In this discussion, I have mentioned our 110 substations and their place in the scheme of electrical distribution. Importance of substations to the supply of power to a given community is generally inversely proportional to their number. With 110 stations in this area, the loss of one or two would not represent

a serious threat to the community as a whole; accordingly, armed guard protection of substations is not usually the case; however, local Police are aware of the location of these facilities and maintain them under routine observation. Of course, if conditions indicated the need, positive protective means could be placed into effect on very short notice.

Although electric utility systems are not normally designed with sabotage in mind, we do have a rather interesting development here in Washington which has a bearing on our subject. As I have noted, substations are normally required to be located at or near the load centers and it is often necessary to construct them in the finest residential sections. As good neighbors and in order to overcome possible objections on the part of home owners in the area, it has been our policy to design these substations in keeping with the homes in the community. The grounds are carefully landscaped and the windows of the buildings are provided with simulated drapes or venetian blinds. The lighting is under automatic control and is designed to give the appearance of normal occupancy. In the two-story type, the lights are turned on automatically on the lower floor in the early evening. Later, illumination on the upper floors appears. Along about 10:30 or 11:00 P. M. all lights are extinguished and the electric home, as a respectable member of the community, is bedded down for the night.

Transformers in these stations are completely enclosed and the openings for ventilation are baffled for sound proofing. These residential type stations are well maintained and the lawns and shrubbery are cut and trimmed on schedule.

As you may suspect, these stations have been a source of many amusing experiences . . . newly-weds and others have inquired as to the possible purchase of these "homes." Advertising material of all types is left in a vain effort to break down the super sales resistance of the lady of the house. Some time ago, members of the Zoning Commission in Montgomery County drove out to visit one of these stations which had just been completed. Since they anticipated no difficulty they failed to obtain the exact address and depended upon the block designation. Upon returning, they told me they had experienced great difficulty in locating the station, since it could not be distinguished from other homes in the neighborhood. When I inquired how they finally found the station, I was told that it had no television antenna and was therefore suspected as not being a true residence. Perhaps with the addition of television antennas our plan of camouflage will be complete.

In my discussion of sabotage and the electric power business, I have attempted to highlight those areas of our plant which may be particularly vulnerable to planned destruction. I have also pointed out the possible effects of such sabotage to the individual customers and to the community in general. Before concluding my remarks, I would like to make one

further observation in connection with the effects of sabotage.

Because of necessity of electric power in our lives today, and since much of the outside plant is continually exposed to the possibility of accidental damage, the electric utility company employs a large number of well-trained and experienced maintenance and construction personnel. These personnel are always available to restore damaged lines, replace transformers and repair switchgear and other facilities. The repair of faulted cable or the restoration of damaged overhead line construction soon becomes a routine operation to these men. The proven capability of the electric utility to restore a power system speedily and efficiently after such damaging forces as hurricanes and snowstorms, will, I believe, be a very important factor in minimizing the effects of sabotage, when and if it should occur.

#### *Growth of ASIS (Continued)*

stature is primarily dependent upon the chapter structure. And, in further recognition of the fact that Regional Vice Presidents are, under the by-laws, particularly charged with the responsibilities for promoting and establishing new chapters in their respective regions.

As of the 1957 Convention/Seminar, ASIS had 13 local chapters. During the past year, 14 new chapters came into being. These chapters are: In the South Central Region, Denver Chapter, established August 20, 1958; in the Great Lakes Region, Cleveland Chapter, established August 20, 1958 in the Central East Region, Richmond Chapter, established September 12, 1958; in the North Central Region, Central Minnesota Chapter, established September 10, 1958; in the South East Region, the Augusta Chapter, established July 18, 1958, and the Northern Alabama Chapter, established May 26, 1958; in the North East Region, the Boston Chapter, established May 12, 1958, the Rochester Chapter, established August 18, 1958, and the Schenectady Chapter, established February 10, 1958; in the Western Region, Arizona Chapter, established January 15, 1958, Edwards Air Force Base, established June 2, 1958, Salt Lake-Ogden Chapter, established June 2, 1958, the San Diego Chapter, established February 10, 1958, and the Santa Barbara Chapter, established June 2, 1958. From the above, it will be noted that the Western Region, with five new chapters, was the Region which grew most rapidly from the chapter standpoint. This Region was headed by Richard J. Healy, subsequently elected President

(Continued on next page)

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### *Growth of ASIS (Continued)*

of ASIS by the Board of Directors, for the year 1958-1959.

Again at the luncheon of the 17th, President Deere, recognized the great efforts of his Regional Vice President for the Western Region, and presented to Mr. Healy the certificate of merit he so richly deserved.

This, then, was the program that Paul Hansen established and supervised. The net results were not up to the standard hoped for by the Membership Committee, and it was a matter of considerable disappointment to the Committee that this was so.

As stated previously, by 1957 convention time, the membership stood at 794. During the ensuing year, 40-odd members were dropped from the rolls for various reasons. During 1957-58, however, 424 new members were obtained. This was a percentage increase of only 57.4%. These members entered the Society in the following categories: 136 active members, 148 associate members and 140 government members.

The program established paid dividends. We did not succeed to the degree hoped for; still, the 57.4% of membership growth is a further solid achievement upon which ASIS can continue to grow.

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### *Technological Progress (Continued)*

tends to encourage over-classification, particularly in new areas where unfamiliarity breeds fear. Then, too, all of us I believe have experienced the thrill—not to mention the prestige value—of working upon a supersecret project. The scientist is not immune to the desire to be engaged in work regarded as being socially significant and nationally important.

It is my thesis that blanket security which includes basic research does not guarantee security; indeed, it tends to insecurity by insisting upon care where it is not needed and thus cheapening the value of care where it is vital. I would argue that we should clearly differentiate between basic research and technological development and have appropriate security measures for each. News items lead me to surmise that greater security may well be required in the case of technological development; but this should not imply that greater precaution is requisite also for basic research. On the contrary, I would argue that freedom is essential for basic research, and hence that greater security will be attained through the technological progress that will follow from complete freedom for basic research, rather than through confining, restricting administrative measures! Let me explain my reasons for these convictions.

In the *New Atlantis* of Francis Bacon, published one year after his death, we find a description of a specialized facility for research, called Salomon's

house. The purpose of this institution was, "The end of our foundation is the knowledge of causes and secret motions of things." If you were not aware that this document had been written in the early days of science, you would accept it as a description of a modern scientific laboratory. It was visualized as containing all kinds of specialized equipment and books. The organization, which was to provide men with free time for scientific inquiry, consisted of thirty-six key individuals, twelve of whom were said to be "merchants of light." Thus, in the initial phase of scientific discovery, we find a recognition of the need for free and wide communication. True to this prophetic vision just a few years ago, Professor Max von Laue remarked in his *History of Physics*, "Since the end of the seventeenth century, physics has been a highly cooperative effort." This is necessarily so because of the unity of nature and because of the unity of science.

Some years ago, when I was teaching at The George Washington University, a man came into my office and inquired if I could help him with the solution of a problem of a falling body. I thought that I should have no trouble in solving such a problem, which is usually discussed in the textbooks of general physics. The man said to me, "A person leaned out a third story window and fell. Was it suicide?" I must confess that the physics textbooks had never included such a problem of a falling body—although it unquestionably was one. It certainly was not the abstract kind of problem with which we are accustomed to deal in physics. Physics, of course, is always an oversimplification of nature. It happened that I once gave a course dealing with physics in its broad relations. I asked a Professor of History to speak about the social significance of physics throughout history. He began by saying, "What is history?" "History," he observed, "is the study of man and his environment." I never had thought of it quite that way, and made a note of this interesting definition. Sometime later a Professor of Philosophy discussed the philosophical implications of science. "What is philosophy?" he asked. "Philosophy is the study of man and his environment." I became confused. I thought about this apparent similarity of definitions for history and for philosophy. The next year I began the course by saying, "What is physics?" "Physics," I admitted, "is the study of man and his environment." After all, we are all studying and teaching the same fundamental problem. One cannot conceive of an environment without a man, or a man without an environment. The fact is that all the problems with which we deal are fundamentally related. Sometimes the answer to a question from a particular viewpoint, comes only by approaching the same problem from a different avenue. For example, in the nineteenth century, people were just as much concerned about how to find out what is inside a human body without cutting it open, as we are today. I am almost certain, however, that regard-

### *Technological Progress (Continued)*

less of the amount of funds that might have been made available for solving this necessary social and medical problem, X-rays would probably have not been detected. Their discovery, you see, was not the result of a frontal attack upon the problem. Rather, X-rays were the by-product of the interested curiosity of a physicist investigating a quite different problem but having sufficient interest to examine attendant phenomena with which he was not familiar. I cannot overemphasize this unity of nature. We truly live in one natural world. Our own departmentalization of our activity has too often resulted in a compartmentalization of our thinking. Any attempt at an artificial division of nature is bound to be an oversimplification. If we are to get the answers to real questions we must not restrict ourselves to narrow theoretical points of view. We need to see the problem from all possible points of view. We can build all the security barriers we wish, but the earth is still one and can shake the very foundations of those barriers.

In view of the unity of nature, it is not surprising that there is also a unity of science. Different points of view require us to have an increased communication, including the common language requisite for such communication—if we are to make maximum use of the findings of one another. Some years ago the National Science Foundation sponsored a conference on the "Abundance of Elements." It was interdisciplinary in character. It so happened that a geologist quoted certain chemical data in his paper. He was severely taken to task by a chemist because the data were not up to date. How was the geologist to know that data published in a reputable chemical journal were not good? A little later a remark of that same chemist was called into question by a physicist; it involved inaccurate data on atomic masses. "Where did you obtain such data?" was the query. The chemist pointed that he had read it in the *Physical Review*. He was not aware that the *Physical Review*, the "bible" of the physicist, was not infallible. The increased specialization of scientists necessitates increased communication. We can substitute for the iron curtain a veil of security; but in shutting others out we must not forget that we are enclosing ourselves. In this respect, we are undoubtedly harming ourselves more than others. Prof. M. C. Vallarta, a member of the Atomic Energy Commission of Mexico, told me how amazed the audience was at the first meeting on atomic energy at Geneva a few years ago. Each of the nations had declassified some of its highly classified material. For the first time some of these facts were being presented to the world at large. An American drew a curve on the blackboard showing the relations between certain physical quantities; then an Englishman revealed the British findings—the curve was identical; finally, a Russian showed the Russian result—the curve was the same. Everyone was amazed.

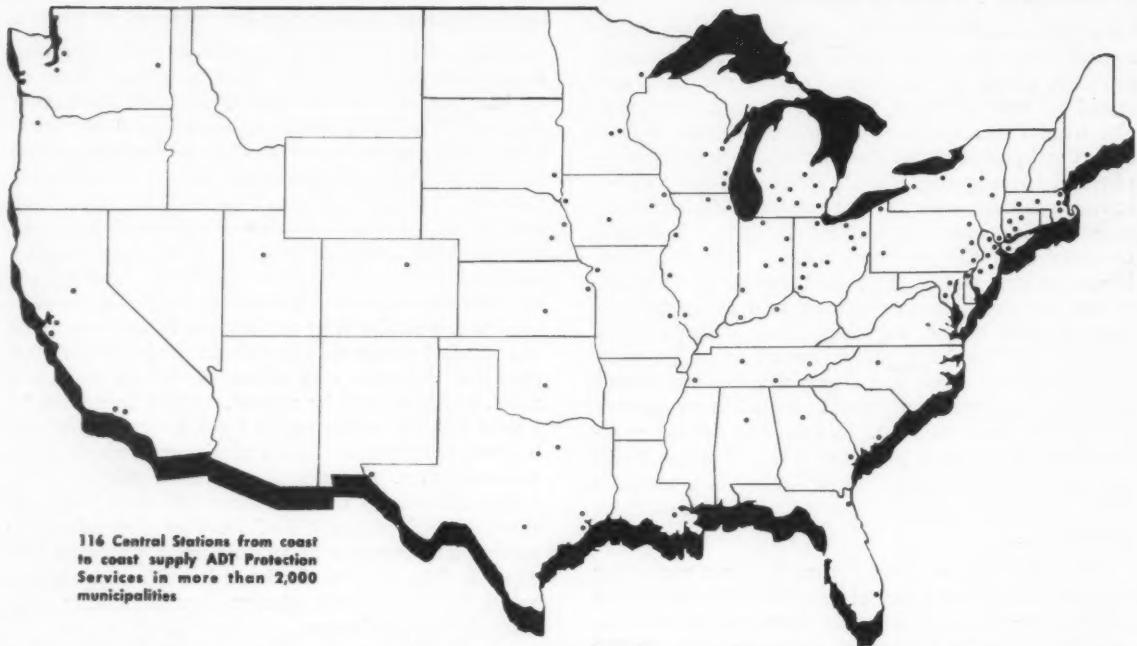
Each nation had the same information, which had been developed in each case behind a veil of secrecy.

During World War II, a colleague of mine was working on high explosions, such as TNT. None of us had occasion to be cleared for the Manhattan Project. One day, however, he wrote down some ideas he had as to how to produce an explosive using nuclear processes. His paper was turned over to Naval Officers. Imagine their consternation when they realized that he had written out essentially the basic idea of the Manhattan Project. The paper was immediately seized and highly classified. One cannot thus envelop men's minds in veils of security; thoughts are not too confined by any manmade barriers. One is reminded of the old story about the horse that was lost, and the man who found it. When asked the secret of his success, he replied, "I said to myself, 'If I were a horse, where would I go?' I went there, and there was the horse." Men's minds are much the same the world over. Occasionally, there is a unique genius, but given enough time the same idea will germinate elsewhere. The growth of an idea depends upon communal reception as well as upon pregnant conception. The history of science has shown again and again that individual advances are eventually overtaken by social advance.

As we review American history, we are conscious that the American genius has expressed itself more often in the applications of science, in the developments of technology, rather than in the creations of basic research. It would seem wise, therefore, for us to encourage free communication among scientists in basic research. If history repeats itself, the chances are that we will gain more than we will give. Under any circumstances, the availability of scientific knowledge is no indication as to how that knowledge will be used. It is the "how" that demands security classification necessarily—not the "what." Let us recall that atomic fission was discovered not in America, not in the NATO countries, but in Germany. Americans, however, realized its practical potential; they proceeded to develop this principle into usable atomic energy.

I would, therefore, argue strongly for complete freedom for all basic research. I would maintain that National Security will be enhanced by the very increasing of such freedom, that it might well be endangered by ignorant attempts to set up veils of security—we would probably be ensuring our own ignorance more than that of others! Mind you, I am speaking of basic research—not development—as the necessary foundation for our continuing technological progress.

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